

JBL

Simply Cinema
ESC230 (120V)
SPEAKER SYSTEM
SERVICE MANUAL



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REV 0 5/00

TABLE OF CONTENTS

GENERAL SPECIFICATIONS2
TECHNICAL SPECIFICATIONS3
CONTROLS AND CONNECTIONS .....	.4
TROUBLE SHOOTING .....	.12
ELECTRICAL PARTS LIST (120V) .....	.13
EXPLODED VIEW .....	.21
PACKING .....	.22
INTEGRATED CIRCUIT DIAGRAMS .....	.23
PRINTED CIRCUIT BOARDS .....	.25
BLOCK DIAGRAM .....	.28
SCHEMATICS .....	.29
IC VOLTAGE READINGS .....	.35

Description

Part Number

ESC230 SUBWOOFER *

J-SP-SUB

ESC230 SATELLITE SPEAKER *

J-SP-SAT

General System Specifications

Power Output	15 watts x 6 @0.1%THD
Signal-to-Noise Ratio	90 dBA
Input Impedance	20k ohms
Input Sensitivity	400 mV
System Frequency Response	35Hz to 20kHz
Dimensions (H x W x D)	Main Unit: 2-11/16 x 13-1/2 x 9" (69 x 343 x 230mm)
	Satellites: 7-1/2 x 4-1/16 x 4-3/8" (190 x 103 x 111mm)
	Subwoofer: 17-3/4 x 7-3/4 x 13-7/8" (451 x 197 x 352mm)

* The ESC230 subwoofer and satellite speakers are not serviceable.

Specifications

ESC230 Pro-Logic Surround Theater System with 6-Channel Direct Input

Power Source: 117V/60Hz 230V/50Hz

Test conditions: 8 ohm loading each channel (6X)

Bass & Treble - flat **Boost** - off
Mode - stereo **Balance** - left = right
Center Trim - center **Surround Trim** - center
Volume - 300mV input for 1W (to nearest step)

Technical Performance Readings

PARAMETERS	UNIT	TYPICAL	LIMIT
1. THD at 8W,1KHz,Output 5CH Driven at 6CH Direct In	%	0.5	1
2. THD at 15W,50Hz,SUB Out,SUB Driven Only	%	1	3
3. Frequency Response at 1KHz,@1W,-3dB at 6CH Direct Mode	Hz	125	100 - 150
	Hz	50k	>30k
4. Frequency Response at SUB at 50Hz,@1W,-3dB at Stereo Mode	Hz	110	85 - 125
	Hz	18	<25
5. Volume Control at 1KHz (from max) at 6Ch Direct In	dB	60	>50
6. Balance Control at 1KHz	dB	20	>18
7. Rear Level Control at 1KHz at Surround Mode	dB	±10	>±6
8. Center Level Control at 1KHz at Surround Mode	dB	±10	>±6
9. Bass (Bass Control) a. Boost at 80Hz b. Cut at 80Hz	dB	8	>5.5
	dB	8	>6
10. Treble (Treble Control) a. Boost at 10KHz b. Cut at 10KHz	dB	8	>6
	dB	8	>6
11. Bass Boost at 80Hz (Boost Function)	dB	6	>5
12. Input Z at 1KHz a. Input1 b. Input2 c. 6 Channel Input	Hz	20k	>14k
	Hz	20k	>14k
	Hz	12k	>10k
13. S/N Ratio "A" at 1W,Input Short at 6CH Direct In	dB	72	>70
14. Noise Level W/30KHz LPF,Input Short at 6Ch Direct In	mV	0.5	1.0
15. S/N Ratio "A" at 1W,Surround Mode L, C, R, SUB Input Short Surround	dB	70	>65
	dB	63	>60
16. Noise Level W/30KHz LPF L, C, R, SUB Surround Mode,Input Short Surround	mV	1.2	<1.5
	mV	1.5	<2.0
17. Input Sensitivity at 8W(Vol at Max) a. Input1 at Stereo Mode b. Input2 at Stereo Mode c. 6 Channel Input 1CH Driven d. 6 Channel Input with SUB Driven	mV	350	270 - 420
	mV	350	270 - 420
	mV	300	250 - 350
	mV	220	180 - 350
18. Seperation at 1W, 1KHz a. Input1 b. Input2 c. 6CH Input	dB	45	>40
	dB	45	>40
	dB	45	>40
19. Current Consumption @ AC 117V at Max Out @ AC 230V	A		<3.0
	A		<1.6

00167

Speaker Connection

To connect your speakers, press down on the quick-release tab, which opens the terminal for the speaker wire, and put the bare end of the wire in straight. Release the tab and give

the speaker wire a gentle tug. If it's in properly, it won't "give" at all. If it slides, repeat the procedure. Use the shortest wire for the CENTER speaker, the two medium-length wires for the

FRONT speakers and the long wires for the REAR speakers. Always insert the RED-coated wire into the RED terminals and the BLACK-coated wire into the

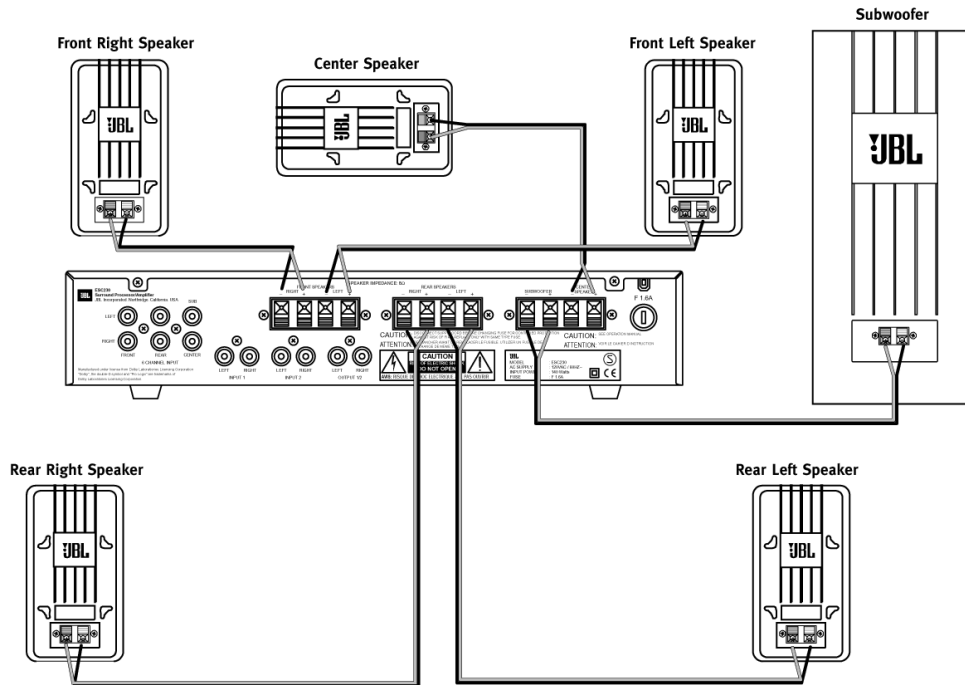
BLACK terminals on each of your speakers and on the appropriate terminal on the back of the Main Unit.

Back of Speaker



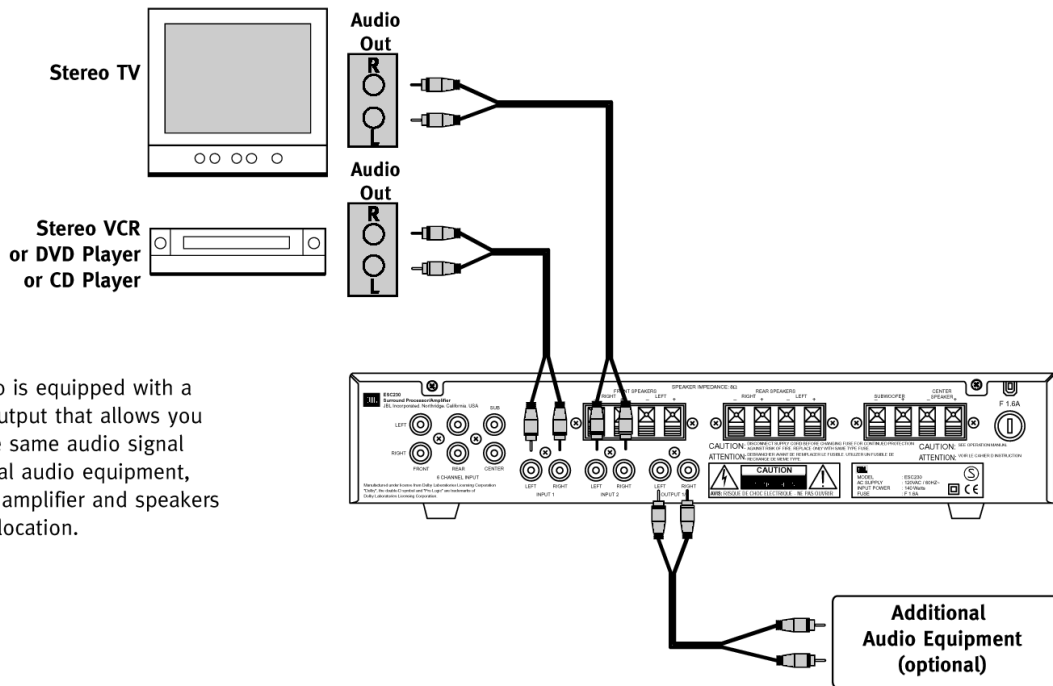
Red Black

Make sure you match RED to RED and BLACK to BLACK on both ends.



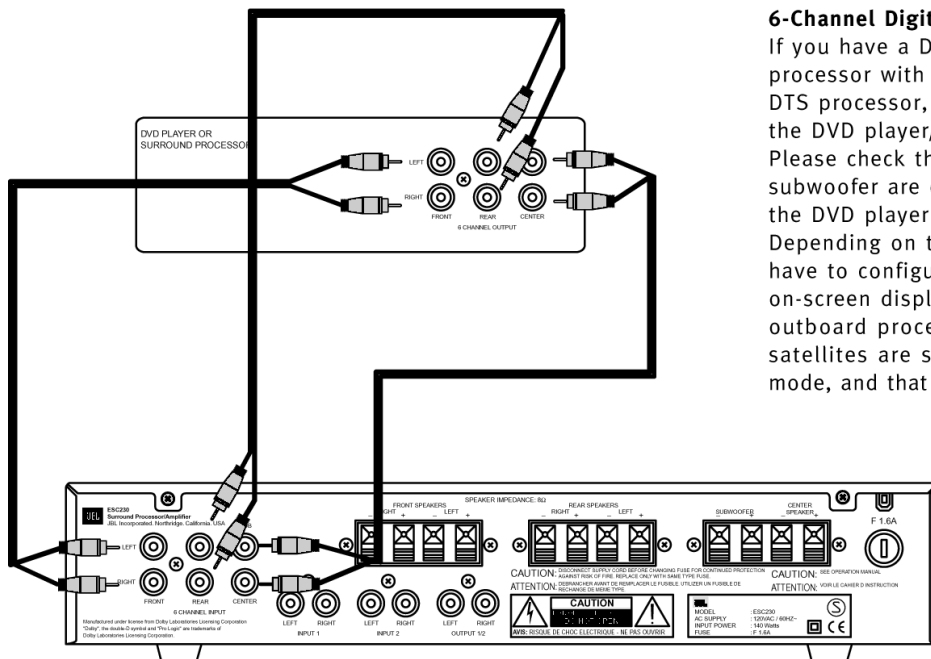
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Source Connection (TV or VCR)



The ESC230 is equipped with a line-level output that allows you to send the same audio signal to additional audio equipment, such as an amplifier and speakers in another location.

DVD Player with Built-In Dolby Digital or DTS® Processor or Outboard Surround Processor

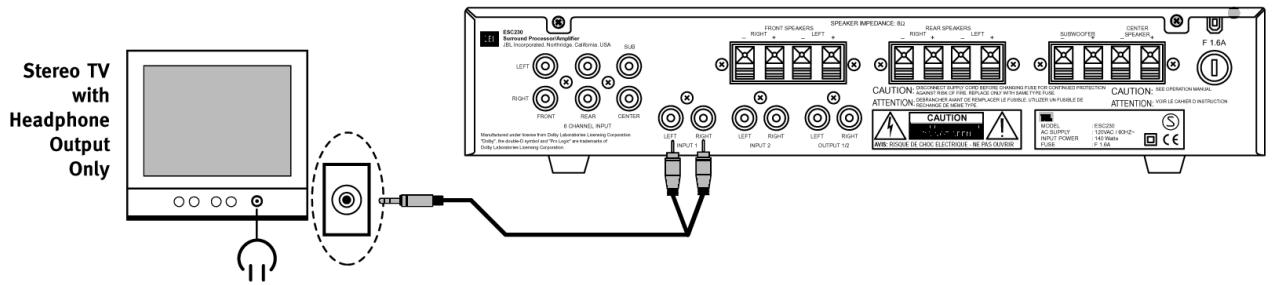


6-Channel Digital Direct

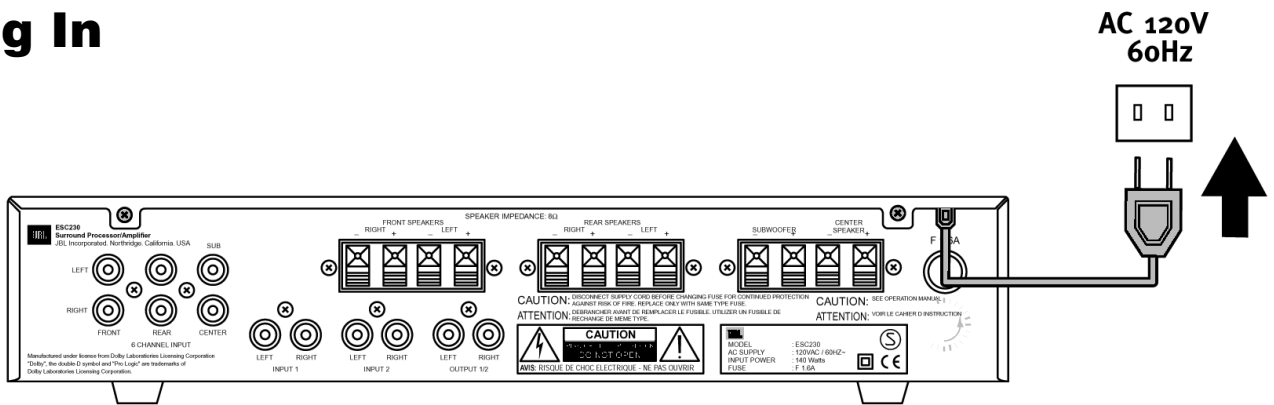
If you have a DVD player or surround processor with a built-in Dolby Digital or DTS processor, connect the 6 outputs of the DVD player/processor as shown. Please check that all 5 satellites and the subwoofer are configured correctly through the DVD player or the outboard processor. Depending on the product you own, you may have to configure these settings using the on-screen display of the DVD player or the outboard processor. Make sure that the satellites are set to *On* and are in *Small* mode, and that the subwoofer is also set to *On*.

00169

Source Connection (Headphone)

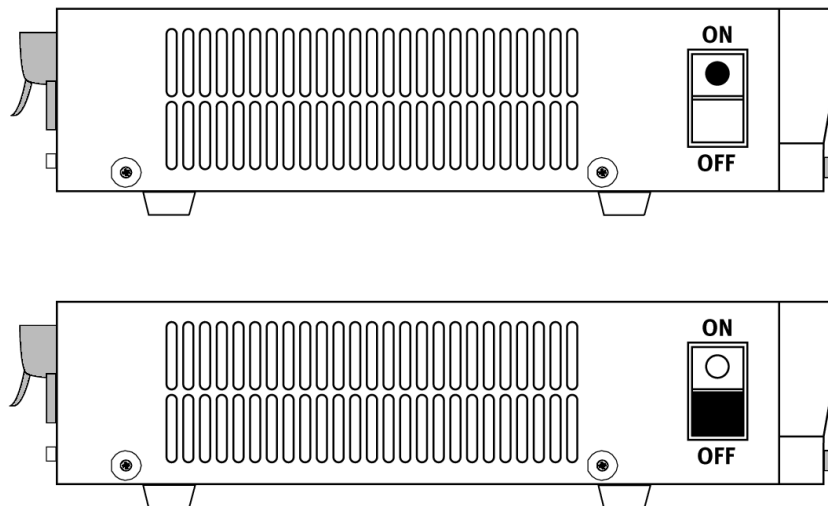


Plug In



Turn On

The *Master Power Switch* should be turned off when the unit will be unused for a long period of time.



Note: The unit will return to default settings when the *Master Power Switch* is turned off.

00170

Surround Modes

Dolby Pro Logic

Use this mode for films recorded using Dolby Surround. The surround channels have a 20-ms delay.

Hall/Concert

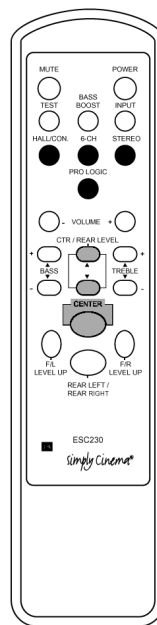
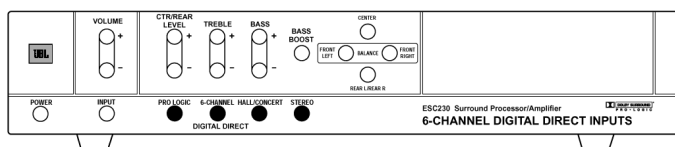
These modes create surround sound from stereo recordings. The center channel is not used and the surround channels have a 20-ms delay. Repeated pressing and releasing of the button provides access to these two modes.

Stereo

This mode plays two-channel recordings through the front left and right speakers.

6-Channel Direct Digital

If you have a DVD player or surround processor with a built-in Dolby Digital or DTS processor, this mode will provide the best quality surround-sound presentation.



Test Mode and Level Adjustments

Test Tone

The test tone is used to calibrate the level settings of the speakers. A static noise will be heard cycling, in order, from the front left, center, right and both surround speakers. Using the remote control, adjust the Center and Surround levels until the volume of all the speakers is the same during the test. The test tone is used to calibrate the performance of the system. When listening to an actual recording, the volume level of the surround channels is generally much lower than that of the front channels. In fact, when listening to a movie, virtually all of the dialogue and a substantial number of effects are reproduced through the center channel.

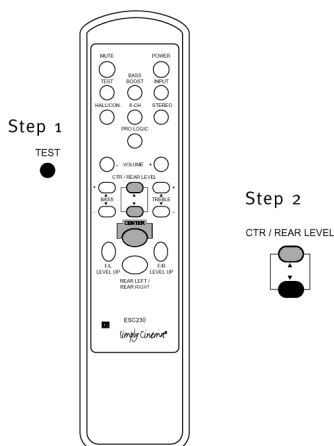
Dolby Pro Logic, Hall and Concert Modes

1. Push the *Test* button on the remote control.
2. When the test tone is heard from the center speaker, push the + or - *Ctr/Rear Level* button to match the volume of the center channel to the front left and right channels.
3. When the test tone is heard from the surround speakers, push the + or - *Ctr/Rear Level* button to match the volume of the rear channels to the front.

6-Channel Input

1. Push the *Test* button on the remote control. The test tone will cycle through all channels.
2. When the test tone is heard from the center speaker, push the + or - *Ctr/Rear Level* button to match the volume of the center channel to the front left and right channels.
3. When the test tone is heard from one of the surround speakers, push the + or - *Ctr/Rear Level* button to match the volume of that surround speaker to the front, left and right channels.
4. Repeat step (3) when the test tone is heard from the other surround speaker.

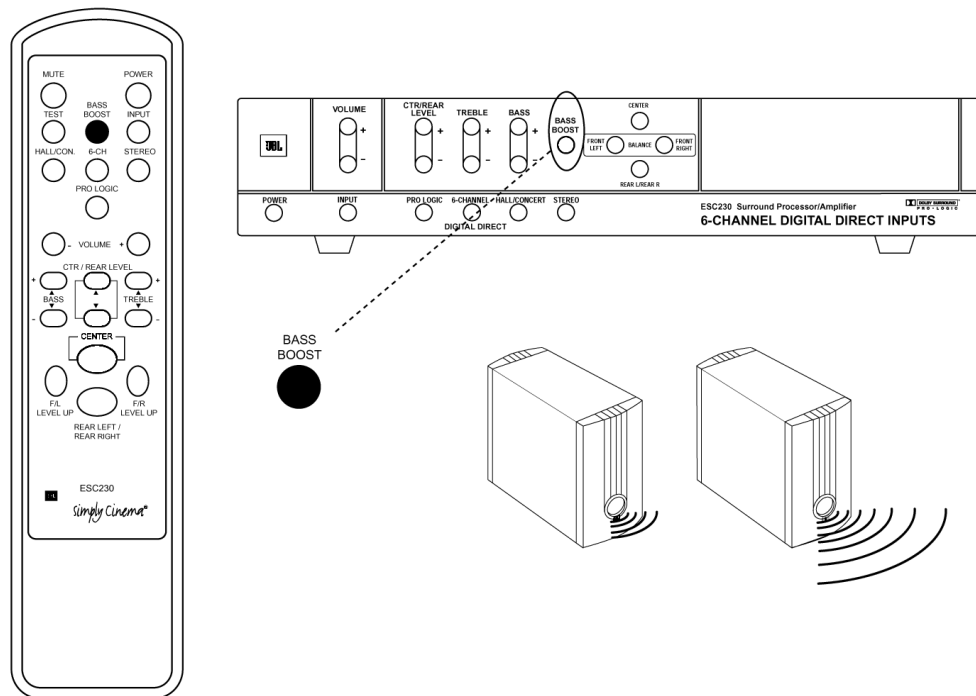
Please note that the 6-channel direct input mode has its own level settings that are independent of the other modes.



00171

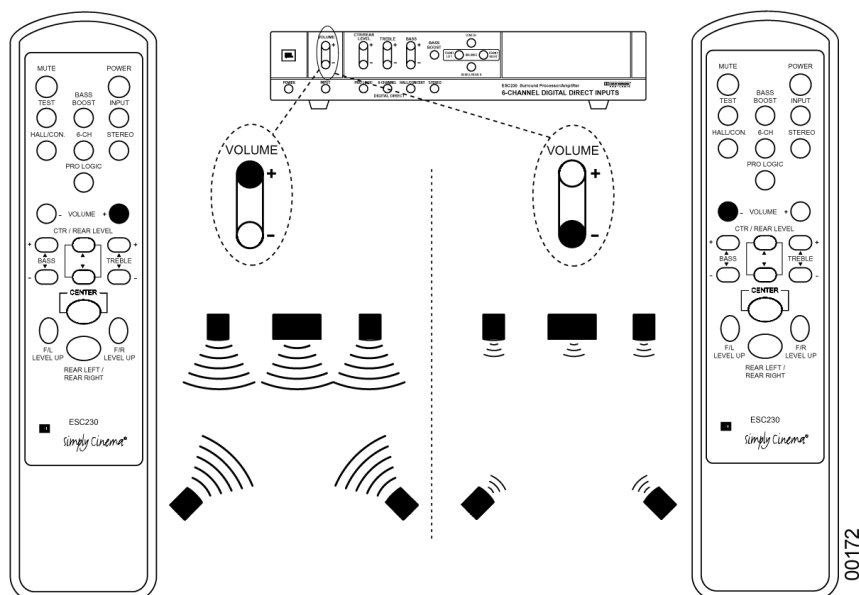
Bass Boost

The *Bass Boost* will increase the amount of low-frequency output.



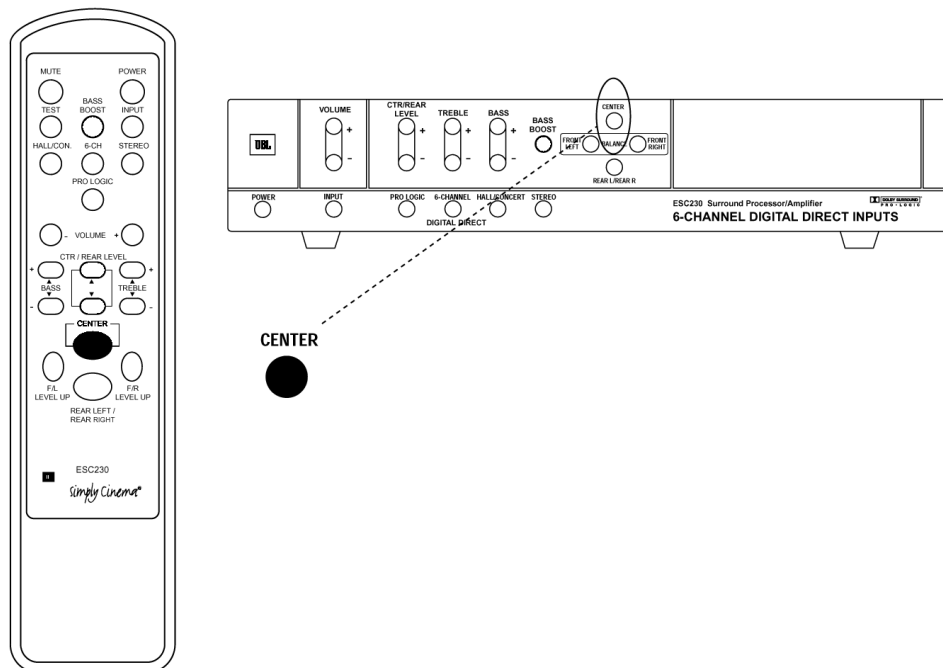
Volume

Push *Volume+* to raise the system volume or *Volume-* to lower the system volume.

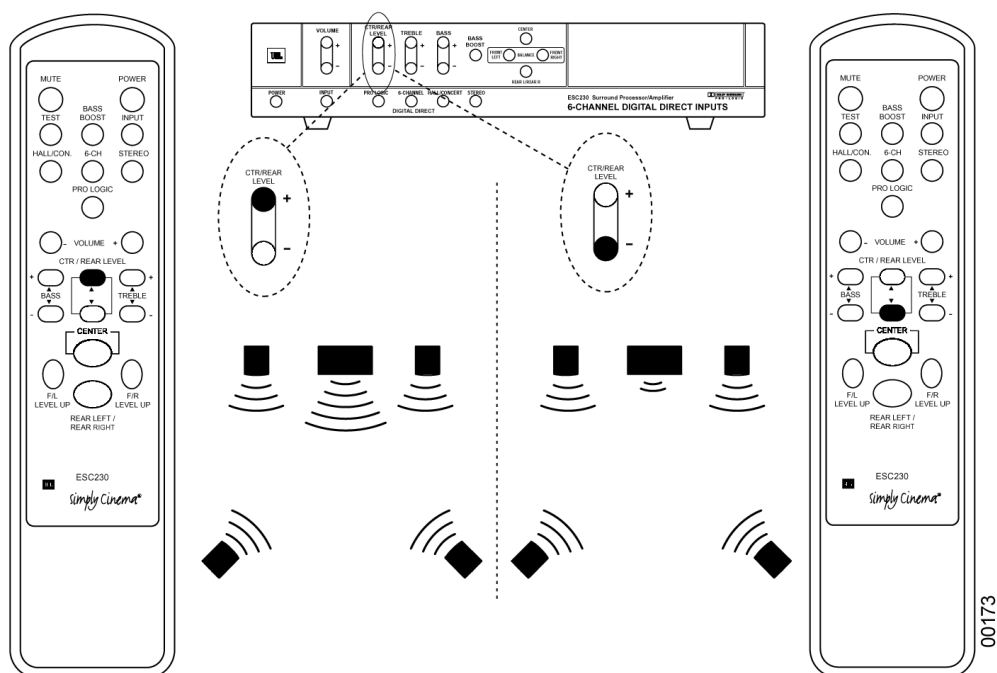


Center Channel

1. Push *Center*.
2. The word CENTER will be illuminated on the display.



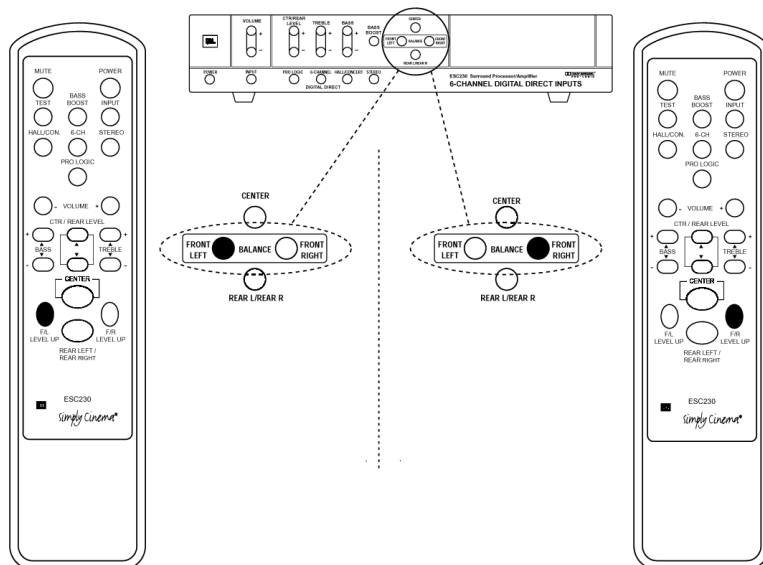
3. Push *Level ▲* or *Level ▼* to adjust the center-channel volume.



00173

Balance

Push *Left* to increase the volume of the left channel in relation to the right channel.
Push *Right* to increase the volume of the right channel in relation to the left channel.



Surround Channel

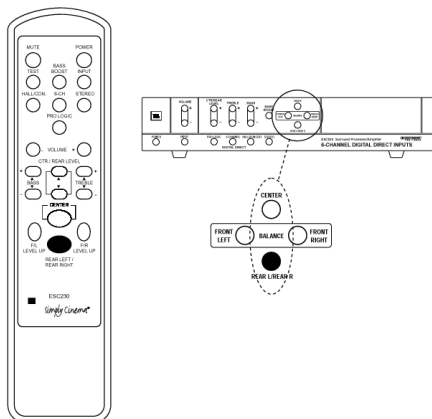
6-Channel Mode

1. Push *Rear* to choose left- or right-surround levels. The display will indicate which rear surround is selected.
2. Push *Level ▲* or *Level ▼* to adjust the surround-channel volume for that specific channel.
3. Push *Rear* again to choose the other surround channel. The display will indicate which rear surround is selected.
4. Push *Level ▲* or *Level ▼* to adjust the surround-channel volume for that specific channel.

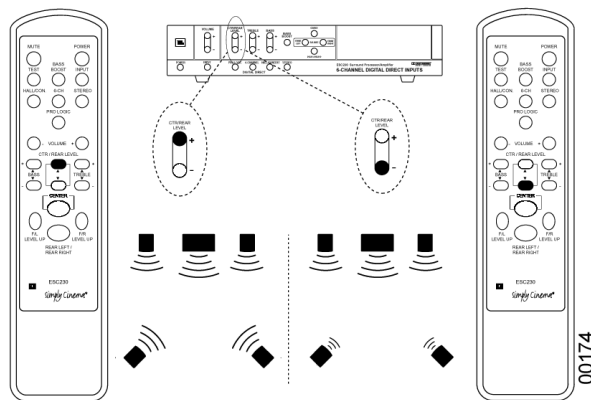
Dolby Pro Logic Mode

1. Push *Rear*. The display will indicate which rear surround is selected.
2. Push *Level ▲* or *Level ▼* to adjust surround-channel volume.

Step 1



Step 2

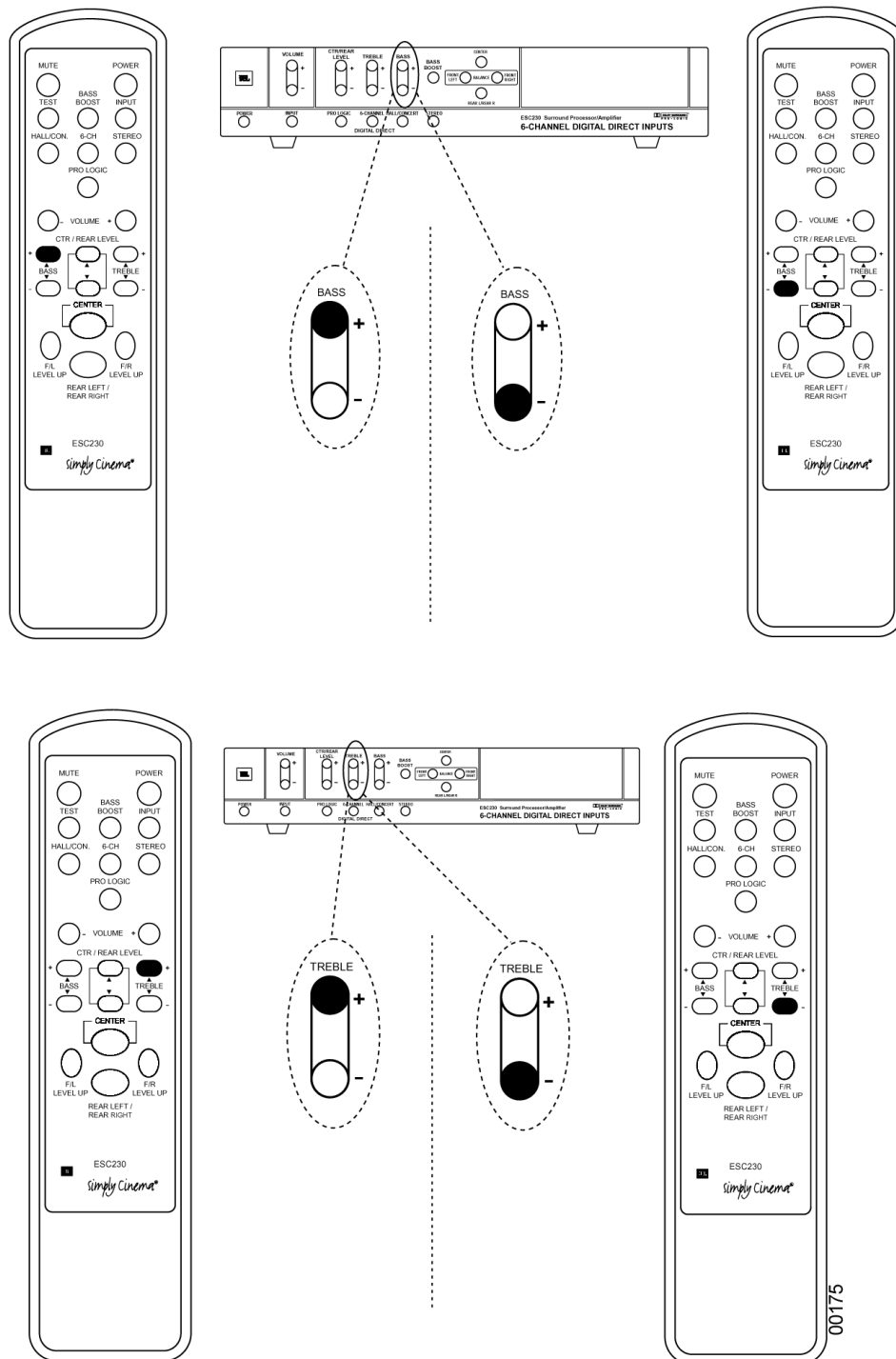


00174

Bass and Treble

Push *Bass* ▲ to increase the level of low frequencies.
Push *Bass* ▼ to decrease the level of low frequencies.

Push *Treble* ▲ to increase the level of high frequencies.
Push *Treble* ▼ to decrease the level of high frequencies.



00175

Trouble Shooting

If you hear no sound at all:

- Make sure the ESC230 main unit is plugged into a live electrical outlet and that the power switch is on.
- Check connections from the ESC230 main unit to the TV, VCR, DVD player and the outboard surround processor.
- If using with a television or outboard surround processor, make sure that the TV or the surround processor is on and a signal is present.
- If using with a VCR, make sure the VCR is playing a tape.
- If using a DVD player, make sure that the DVD is playing.
- If using the 6-channel digital direct inputs, make sure that the 6-channel mode is selected and its indicator is illuminated on the display. There will be no output if the product is in any other mode.

- If using the conventional right and left inputs 1 or 2, make sure that Dolby Pro Logic, Hall, Concert or Stereo mode is selected and its indicator is illuminated in the display. There will be no output if the product is in the 6-channel mode. Also make sure that the appropriate input (1 or 2) is selected as illuminated in the display.
- Check all connections between the ESC230 main unit and each of the speakers.

If one or more of the speakers does not play:

- Check all connections between the ESC230 main unit and each of the speakers.
- Adjust the balance controls from left to right and front to rear.

If you have very little bass output:

- Make sure the subwoofer is connected properly to the ESC230 main unit.
- Experiment with placement of the subwoofer. Remember, place the subwoofer in a corner to get maximum bass output from the system.
- Make sure *Bass Boost* is on.
- Adjust *Bass* level.

If there is no sound coming from the rear speakers or the volume is very low:

- Check all connections between ESC230 main unit and each of the speakers.
- Adjust the front-rear balance controls on the ESC230 main unit.
- Make sure the TV show or movie you are watching is recorded in Dolby Surround. If it is not, try the *Concert Hall* or *Stereo* settings on the ESC230 main unit.

When using the 6-channel digital direct inputs, if there is no sound coming from some channels:

- Make sure that all 6 connectors are securely connected on both the DVD player/outboard processor side and the ESC230 side.
- Make sure that the DVD player/outboard processor's built-in decoder is correctly configured to provide output to all 5 satellites and the subwoofer. (Depending on the product you own, you may have to do this using that specific product's on-screen display.) Make sure that the satellites are set to *Small* and the subwoofer is set to *On* by checking the settings of the DVD player or outboard surround processor.

00176

ESC230 (120V) Parts List

Ref. Designator	Part Number	Description	Quantity
INPUT PCB	PCB-NK620C-INPU		1
C432 - 437	150F-101K-5-IEA	CC 50V 100P 10%	6
PCB-4	1723-716A-0000	PCB 2875-2/3/4 R	1
RCA401	2113-1243-0	6RCA JACK HSP-20	1
JP201	7010-3419-0	CN ASSY PCE98-09 7POS	1
KEY PCB ASSY	PCB-NK620C-KEY		1
Capacitors			
C102	150F-104M-N-FD	CC 50V 0.1U 20%	1
C103	150F-104M-N-FD	CC 50V 0.1U 20%	1
C101	157C-107M-5-IU	CE 10V 100uF 20%	1
C104	157C-227M-5-KW	CE 10V 220uF 20%	1
C107	157E-106M-5-IU	CE 25V 10uF 20%	1
C105	15CH-300K-5-IEA	CTC 0/60 30pF 10 5X3	1
C106	15CH-300K-5-IEA	CTC 0/60 30pF 10 5X3	1
Transistors			
Q102 - 106	4860-8710-5	TR 9012H PNP	5
Q107	4860-8720-5	TR 9013H SAMSUNG NPN	1
Q108	4860-8720-5	TR 9013H SAMSUNG NPN	1
Q109	4860-8720-5	TR 9013H SAMSUNG NPN	1
Q110 - 114	4860-8720-5	TR 9013H SAMSUNG NPN	5
Resistors			
R113 -117	4701-103J-2	RCF 1/8W 10K 5%	19
R123			
R129 - 133			
R143 - 150			
R121	4701-105J-2	RCF 1/8W 1M 5% A	1
R122	4701-222J-2	RCF 1/8W 2.2K 5%	1
R101- 112	4701-333J-2	RCF 1/8W 33K 5%	12
R118	4701-470J-2	RCF 1/8W 47 ohms 5%	1
R120	4701-470J-2	RCF 1/8W 47 ohms 5%	1
R134 - 141	4701-470J-2	RCF 1/8W 47 ohms 5%	8
R124 - 128	4701-471J-2	RCF 1/8W 470 ohms 5%	5
R119	4701-472J-2	RCF 1/8W 4.7K 5%	1
Diodes			
D101-109	4840-8060-2	DIODE 1N4148 NS	9
Miscellaneous			
PCB-1	1723-724A-0000	PCB PANEL 2875-1	1
	2460-1440-0	2875 LED DISPLAY	1
X101	2703-9000-0	CR CSA4.19MHZ MU	1
U101	3131-4990-0	UPD75108CW-M5 NEC	1
		MICROPROCESSOR	
IR101	4840-8290-0	PHOTO MODULES TS	1
JP101	7010-3417-0	CN ASSY PCE98-09 3POS	1
JP102	7010-3418-0	CN ASSY PCE98-09 6POS	1
U102	7011-8100-0	CONN WIRE 60MM (10+3)	1

00166-1

ESC230 (120V) Parts List (Cont.)

Ref. Designator	Part Number	Description	Quantity
PCB ASSY MAIN	PCB-NK620C-MAIN		1
Capacitors			
C508	150F-100K-5-IEA	CC 50V 10P 10% R	1
C519	150F-100K-5-IEA	CC 50V 10P 10% R	1
C529	150F-100K-5-IEA	CC 50V 10P 10% R	1
C541	150F-100K-5-IEA	CC 50V 10P 10% R	1
C551	150F-100K-5-IEA	CC 50V 10P 10% R	1
C561	150F-100K-5-IEA	CC 50V 10P 10% R	1
C201 - 204	150F-101K-5-IEA	CC 50V 100P 10%	4
C209	150F-101K-5-IEA	CC 50V 100P 10%	1
C210	150F-101K-5-IEA	CC 50V 100P 10%	1
C326	150F-101K-5-IEA	CC 50V 100P 10%	1
C403	150F-101K-5-IEA	CC 50V 100P 10%	1
C218	150F-103K-5-QUA	CC 50V 0.01U 10%	1
C222	150F-103K-5-QUA	CC 50V 0.01U 10%	1
C566	150F-103K-5-QUA	CC 50V 0.01U 10%	1
C567	150F-103K-5-QUA	CC 50V 0.01U 10%	1
C568	150F-103K-5-QUA	CC 50V 0.01U 10%	1
C219	150F-104M-N-FD	CC 50V 0.1U 20%	1
C305	150F-104M-N-FD	CC 50V 0.1U 20%	1
C306 - 309	150F-104M-N-FD	CC 50V 0.1U 20%	4
C312	150F-104M-N-FD	CC 50V 0.1U 20%	1
C313	150F-104M-N-FD	CC 50V 0.1U 20%	1
C316	150F-104M-N-FD	CC 50V 0.1U 20%	1
C329	150F-104M-N-FD	CC 50V 0.1U 20%	1
C330	150F-104M-N-FD	CC 50V 0.1U 20%	1
C331	150F-104M-N-FD	CC 50V 0.1U 20%	1
C335	150F-104M-N-FD	CC 50V 0.1U 20%	1
C336	150F-104M-N-FD	CC 50V 0.1U 20%	1
C343	150F-104M-N-FD	CC 50V 0.1U 20%	1
C346	150F-104M-N-FD	CC 50V 0.1U 20%	1
C348	150F-104M-N-FD	CC 50V 0.1U 20%	1
C359	150F-104M-N-FD	CC 50V 0.1U 20%	1
C426	150F-104M-N-FD	CC 50V 0.1U 20%	1
C427	150F-104M-N-FD	CC 50V 0.1U 20%	1
C430	150F-104M-N-FD	CC 50V 0.1U 20%	1
C431	150F-104M-N-FD	CC 50V 0.1U 20%	1
C601	150F-104M-N-FD	CC 50V 0.1U 20%	1
C604	150F-104M-N-FD	CC 50V 0.1U 20%	1
C605	150F-104M-N-FD	CC 50V 0.1U 20%	1
C608	150F-104M-N-FD	CC 50V 0.1U 20%	1
C610	150F-104M-N-FD	CC 50V 0.1U 20%	1
C612	150F-104M-N-FD	CC 50V 0.1U 20%	1
C614	150F-104M-N-FD	CC 50V 0.1U 20%	1
C505	150F-221K-5-IEA	CC 50V 220P 10%	1
C517	150F-221K-5-IEA	CC 50V 220P 10%	1
C527	150F-221K-5-IEA	CC 50V 220P 10%	1
C539	150F-221K-5-IEA	CC 50V 220P 10%	1
C549	150F-221K-5-IEA	CC 50V 220P 10%	1
C558	150F-221K-5-IEA	CC 50V 220P 10%	1
C317	150F-224M-N-II	CC 50V 0.22UF 20	1
C318	150F-224M-N-II	CC 50V 0.22UF 20	1
C321	150F-224M-N-II	CC 50V 0.22UF 20	1
C322	150F-224M-N-II	CC 50V 0.22UF 20	1
C328	150F-471K-5-IEA	CC 50V 470P 10%	1
C303	150F-681J-5-OI	CC 50V 680PF 5%	1
C304	150F-681J-5-OI	CC 50V 680PF 5%	1
C333	153H-103K-5-KNA	CM 100V 0.01UF 1	1

00166-2

ESC230 (120V) Parts List (Cont.)

Ref. Designator	Part Number	Description	Quantity
C339	153H-103K-5-KNA	CM 100V 0.01UF 1	1
C213 - 216	153H-104K-5-QUA	CM 100V 0.1UF 10 9X11	4
C401	153H-104K-5-QUA	CM 100V 0.1UF 10 9X11	1
C404	153H-104K-5-QUA	CM 100V 0.1UF 10 9X11	1
C501	153H-104K-5-QUA	CM 100V 0.1UF 10 9X11	1
C502	153H-104K-5-QUA	CM 100V 0.1UF 10 9X11	1
C513	153H-104K-5-QUA	CM 100V 0.1UF 10 9X11	1
C514	153H-104K-5-QUA	CM 100V 0.1UF 10 9X11	1
C523	153H-104K-5-QUA	CM 100V 0.1UF 10 9X11	1
C524	153H-104K-5-QUA	CM 100V 0.1UF 10 9X11	1
C535	153H-104K-5-QUA	CM 100V 0.1UF 10 9X11	1
C536	153H-104K-5-QUA	CM 100V 0.1UF 10 9X11	1
C545	153H-104K-5-QUA	CM 100V 0.1UF 10 9X11	1
C546	153H-104K-5-QUA	CM 100V 0.1UF 10 9X11	1
C327	153H-122K-5-INA	CM 100V 0.0012UF 9X11	1
C332	153H-182K-5-INA	CM 100V 0.0018UF	1
C338	153H-182K-5-INA	CM 100V 0.0018UF	1
C310	153H-223K-5-KQA	CM 100V 0.022UF	1
C311	153H-223K-5-KQA	CM 100V 0.022UF	1
C509	153H-224K-5-VYA	CM 100V 0.22UF 1	1
C520	153H-224K-5-VYA	CM 100V 0.22UF 1	1
C531	153H-224K-5-VYA	CM 100V 0.22UF 1	1
C542	153H-224K-5-VYA	CM 100V 0.22UF 1	1
C553	153H-224K-5-VYA	CM 100V 0.22UF 1	1
C560	153H-224K-5-VYA	CM 100V 0.22UF 1	1
C420	153H-472K-5-JNA	CM 100V 0.0047UF	1
C423	153H-472K-5-JNA	CM 100V 0.0047UF	1
C314	153H-473K-5-ORA	CM 100V 0.047UF	1
C315	153H-473K-5-ORA	CM 100V 0.047UF	1
C324	153H-473K-5-ORA	CM 100V 0.047UF	1
C325	153H-562K-5-JNA	CM 100V 0.0056UF	1
C354	153H-562K-5-JNA	CM 100V 0.0056UF	1
C421	153H-562K-5-JNA	CM 100V 0.0056UF	1
C424	153H-562K-5-JNA	CM 100V 0.0056UF	1
C334	153H-683K-5-PSA	CM 100V 0.068UF	1
C337	153H-683K-5-PSA	CM 100V 0.068UF	1
C357	156F-226M-5-IUT	CEL 50V 22UF 20%	1
C323	156F-684M-5-IUT	CEL 50V 0.68uF 2	1
C220	157C-107M-5-IU	CE 10V 100uF 20%	1
C221	157C-107M-5-IU	CE 10V 100uF 20%	1
C342	157C-107M-5-IU	CE 10V 100uF 20%	1
C615	157C-107M-5-IU	CE 10V 100uF 20%	1
C358	157C-108M-5-O5	10V+-20% 8*15.5	1
C356	157C-227M-5-KW	CE 10V 220uF 20%	1
C564	157C-477M-5-OU	CE 10V 470UF 20%	1
C611	157C-477M-5-OU	CE 10V 470UF 20%	1
C341	157D-226M-5-IU	CE 16V 22uF 20%	1
C559	157D-226M-5-IU	CE 16V 22uF 20%	1
C570	157D-336M-5-IU	CE 16V 33uF 20%	1
C353	157D-476M-5-IU	CE 16V 47uF 20%	1
C205 -208	157E-106M-5-IU	CE 25V 10uF 20%	4
C217	157E-106M-5-IU	CE 25V 10uF 20%	1
C301	157E-106M-5-IU	CE 25V 10uF 20%	1
C302	157E-106M-5-IU	CE 25V 10uF 20%	1
C349 - 352	157E-106M-5-IU	CE 25V 10uF 20%	4
C355	157E-106M-5-IU	CE 25V 10uF 20%	1
C402	157E-106M-5-IU	CE 25V 10uF 20%	1
C405	157E-106M-5-IU	CE 25V 10uF 20%	1
C406 - 411	157E-106M-5-IU	CE 25V 10uF 20%	6
C428	157E-106M-5-IU	CE 25V 10uF 20%	1

00166-3

ESC230 (120V) Parts List (Cont.)

Ref. Designator	Part Number	Description	Quantity
C429	157E-106M-5-IU	CE 25V 10uF 20%	1
C565	157E-106M-5-IU	CE 25V 10uF 20%	1
C569	157E-106M-5-IU	CE 25V 10uF 20%	1
C602	157E-228M-5-Y+	CE 25V 2200UF 20	1
C603	157E-228M-5-Y+	CE 25V 2200UF 20	1
C606	157E-228M-5-Y+	CE 25V 2200UF 20	1
C607	157E-228M-5-Y+	CE 25V 2200UF 20	1
C609	157E-477M-5-O4	CE 25V 470UF 20%	1
C613	157E-477M-5-O4	CE 25V 470UF 20%	1
C340	157F-105M-5-IU	CE 50V 1uF 20% R	1
C503	157F-225M-5-IU	CE 50V 2.2uF 20%	1
C504	157F-225M-5-IU	CE 50V 2.2uF 20%	1
C507	157F-225M-5-IU	CE 50V 2.2uF 20%	1
C515	157F-225M-5-IU	CE 50V 2.2uF 20%	1
C516	157F-225M-5-IU	CE 50V 2.2uF 20%	1
C518	157F-225M-5-IU	CE 50V 2.2uF 20%	1
C525	157F-225M-5-IU	CE 50V 2.2uF 20%	1
C526	157F-225M-5-IU	CE 50V 2.2uF 20%	1
C528	157F-225M-5-IU	CE 50V 2.2uF 20%	1
C537	157F-225M-5-IU	CE 50V 2.2uF 20%	1
C538	157F-225M-5-IU	CE 50V 2.2uF 20%	1
C540	157F-225M-5-IU	CE 50V 2.2uF 20%	1
C547	157F-225M-5-IU	CE 50V 2.2uF 20%	1
C548	157F-225M-5-IU	CE 50V 2.2uF 20%	1
C550	157F-225M-5-IU	CE 50V 2.2uF 20%	1
C557	157F-225M-5-IU	CE 50V 2.2uF 20%	1
C211	157F-335M-5-IU	CE 50V 3.3uF 20%	1
C212	157F-335M-5-IU	CE 50V 3.3uF 20%	1
C412 - 417	157F-335M-5-IU	CE 50V 3.3uF 20%	7
C438	157F-335M-5-IU	CE 50V 3.3uF 20%	1
C439	157F-335M-5-IU	CE 50V 3.3uF 20%	1
C319	157F-475M-5-IU	CE 50V 4.7uF 20%	1
C320	157F-475M-5-IU	CE 50V 4.7uF 20%	1
C422	157F-824K-5-GMAA	CE 50V 0.82U 10%	1
C425	157F-824K-5-GMAA	CE 50V 0.82U 10%	1
C506	157Q-336M-5-IU	CE 35V 33UF 20%	1
C512	157Q-336M-5-IU	CE 35V 33UF 20%	1
C530	157Q-336M-5-IU	CE 35V 33UF 20%	1
C534	157Q-336M-5-IU	CE 35V 33UF 20%	1
C552	157Q-336M-5-IU	CE 35V 33UF 20%	1
C556	157Q-336M-5-IU	CE 35V 33UF 20%	1
C344	15CH-270K-5-IEA	CTC 0/60 27P 10%	1
C345	15CH-270K-5-IEA	CTC 0/60 27P 10%	1
Integrated Circuits			
U202	3130-4450-0	IC LC7821N ANALOG SWITCH	1
U402 - 404	3130-5220-0	IC 4066 QUAD BIL SWITCH	3
U401	3131-4910-0	IC M62446FP MITS (SMD) ELECTRONIC VOLUME CTRL	1
U502, 504, 506	3131-5590-0	IC LM1876TF NS 20W POWER AMPLIFIER	3
U301	3131-5750-0	IC NJW1103FC3 SURROUND PROCESSOR	1
U201, 501, 503, 505	3131-6140-0	IC BA4560 DUAL OP-AMP	4
Diodes			
D601- 604	4840-8270-0	RECTIFIER DIODE	4

00166-4

ESC230 (120V) Parts List (Cont.)

Ref.	Designator	Part Number	Description	Quantity
Transistor/Regulator				
	U602	3130-2020-2	7805 +5V Regulator	1
	U601	4860-8050-0	7809 +9v Regulator	1
	Q501	4860-8890-0	TR MPS A06 VCE 8	1
Resistors				
	R422	4701-101J-2	RCF 1/8W 100 ohms 5%	1
	R424 - 429	4701-101J-2	RCF 1/8W 100 ohms 5%	6
	R209	4701-103J-2	RCF 1/8W 10K 5%	1
	R210	4701-103J-2	RCF 1/8W 10K 5%	1
	R211	4701-103J-2	RCF 1/8W 10K 5%	1
	R212	4701-103J-2	RCF 1/8W 10K 5%	1
	R217 - 222	4701-103J-2	RCF 1/8W 10K 5%	6
	R319	4701-103J-2	RCF 1/8W 10K 5%	1
	R430	4701-103J-2	RCF 1/8W 10K 5%	1
	R503	4701-103J-2	RCF 1/8W 10K 5%	1
	R511	4701-103J-2	RCF 1/8W 10K 5%	1
	R520	4701-103J-2	RCF 1/8W 10K 5%	1
	R527	4701-103J-2	RCF 1/8W 10K 5%	1
	R535	4701-103J-2	RCF 1/8W 10K 5%	1
	R541	4701-103J-2	RCF 1/8W 10K 5%	1
	R549	4701-103J-2	RCF 1/8W 10K 5%	1
	R201 - 206	4701-104J-2	RCF 1/8W 100K 5%	6
	R312	4701-104J-2	RCF 1/8W 100K 5%	1
	R313	4701-104J-2	RCF 1/8W 100K 5%	1
	R322	4701-104J-2	RCF 1/8W 100K 5%	1
	R406 - 410	4701-104J-2	RCF 1/8W 100K 5%	5
	R412	4701-104J-2	RCF 1/8W 100K 5%	1
	R413	4701-104J-2	RCF 1/8W 100K 5%	1
	R414	4701-104J-2	RCF 1/8W 100K 5%	1
	R415	4701-104J-2	RCF 1/8W 100K 5%	1
	R551	4701-104J-2	RCF 1/8W 100K 5%	1
	R318	4701-105J-2	RCF 1/8W 1M 5% A	1
	R317	4701-151J-2	RCF 1/8W 150 ohms 5%	1
	R307	4701-153J-2	RCF 1/8W 15K 5%	1
	R308	4701-153J-2	RCF 1/8W 15K 5%	1
	R403	4701-153J-2	RCF 1/8W 15K 5%	1
	R405	4701-153J-2	RCF 1/8W 15K 5%	1
	R504	4701-154J-2	RCF 1/8W 150K 5%	1
	R506	4701-154J-2	RCF 1/8W 150K 5%	1
	R512	4701-154J-2	RCF 1/8W 150K 5%	1
	R514	4701-154J-2	RCF 1/8W 150K 5%	1
	R521	4701-154J-2	RCF 1/8W 150K 5%	1
	R524	4701-154J-2	RCF 1/8W 150K 5%	1
	R528	4701-154J-2	RCF 1/8W 150K 5%	1
	R530	4701-154J-2	RCF 1/8W 150K 5%	1
	R536	4701-154J-2	RCF 1/8W 150K 5%	1
	R538	4701-154J-2	RCF 1/8W 150K 5%	1
	R542	4701-154J-2	RCF 1/8W 150K 5%	1
	R544	4701-154J-2	RCF 1/8W 150K 5%	1
	R519	4701-182J-2	RCF 1/8W 1.8K 5%	1
	R529	4701-182J-2	RCF 1/8W 1.8K 5%	1
	R537	4701-182J-2	RCF 1/8W 1.8K 5%	1
	R320	4701-203J-2	RCF 1/8W 20K 5%	1
	R411	4701-203J-2	RCF 1/8W 20K 5%	1
	R416	4701-203J-2	RCF 1/8W 20K 5%	1
	R417	4701-203J-2	RCF 1/8W 20K 5%	1
	R207	4701-222J-2	RCF 1/8W 2.2K 5%	1

00166-5

ESC230 (120V) Parts List (Cont.)

Ref. Designator	Part Number	Description	Quantity
R208	4701-222J-2	RCF 1/8W 2.2K 5%	1
R314	4701-222J-2	RCF 1/8W 2.2K 5%	1
R301	4701-223J-2	RCF 1/8W 22K 5%	1
R302	4701-223J-2	RCF 1/8W 22K 5%	1
R404	4701-223J-2	RCF 1/8W 22K 5%	1
R418 - 421	4701-223J-2	RCF 1/8W 22K 5%	4
R548	4701-223J-2	RCF 1/8W 22K 5%	1
R321	4701-224J-2	RCF 1/8W 220K 5%	1
R501	4701-242J-2	RCF 1/8W 2.4K 5%	1
R509	4701-242J-2	RCF 1/8W 2.4K 5%	1
R517	4701-242J-2	RCF 1/8W 2.4K 5%	1
R525	4701-242J-2	RCF 1/8W 2.4K 5%	1
R533	4701-242J-2	RCF 1/8W 2.4K 5%	1
R543	4701-242J-2	RCF 1/8W 2.4K 5%	1
R310	4701-243J-2	RCF 1/8W 24K 5%	1
R311	4701-243J-2	RCF 1/8W 24K 5%	1
R401	4701-303J-2	RCF 1/8W 30K 5%	1
R402	4701-303J-2	RCF 1/8W 30K 5%	1
R502	4701-303J-2	RCF 1/8W 30K 5%	1
R510	4701-303J-2	RCF 1/8W 30K 5%	1
R518	4701-303J-2	RCF 1/8W 30K 5%	1
R526	4701-303J-2	RCF 1/8W 30K 5%	1
R534	4701-303J-2	RCF 1/8W 30K 5%	1
R309	4701-334J-2	RCF 1/8W 330K 5%	1
R550	4701-392J-2	RCF 1/8W 3.9K 5%	1
R303	4701-473J-2	RCF 1/8W 47K 5%	1
R304	4701-473J-2	RCF 1/8W 47K 5%	1
R323	4701-475J-2	RCF 1/8W 4.7M 5%	1
R215	4701-512J-2	RCF 1/8W 5.1K 5%	1
R216	4701-512J-2	RCF 1/8W 5.1K 5%	1
R315	4701-513J-2	RCF 1/8W 51K 5%	1
R316	4701-513J-2	RCF 1/8W 51K 5%	1
R505	4701-562J-2	RCF 1/8W 5.6K 5%	1
R513	4701-562J-2	RCF 1/8W 5.6K 5%	1
R305	4701-752J-2	RCF 1/8W 7.5K 5%	1
R306	4701-752J-2	RCF 1/8W 7.5K 5%	1
R213	4701-823J-2	RCF 1/8W 82K 5%	1
R214	4701-823J-2	RCF 1/8W 82K 5%	1
R507	4707-010J-2	RCF 1/2W 1 ohms 5% A	1
R516	4707-010J-2	RCF 1/2W 1 ohms 5% A	1
R522	4707-010J-2	RCF 1/2W 1 ohms 5% A	1
R531	4707-010J-2	RCF 1/2W 1 ohms 5% A	1
R539	4707-010J-2	RCF 1/2W 1 ohms 5% A	1
R545	4707-010J-2	RCF 1/2W 1 ohms 5% A	1
R508	4707-100J-2	RCF 1/2W 10 ohms 5%	1
R515	4707-100J-2	RCF 1/2W 10 ohms 5%	1
R523	4707-100J-2	RCF 1/2W 10 ohms 5%	1
R532	4707-100J-2	RCF 1/2W 10 ohms 5%	1
R540	4707-100J-2	RCF 1/2W 10 ohms 5%	1
R546	4707-100J-2	RCF 1/2W 10 ohms 5%	1
R547	4707-100J-2	RCF 1/2W 10 ohms 5%	1
R601	4718-100J-C-X	RMF 1W 10 ohms 5% AT	1
R602	4718-100J-C-X	RMF 1W 10 ohms 5% AT	1
R423	4718-561J-C-X	RMF 1W 560 ohms 5% A	1
Diodes			
Z301	4837-5V16-2	Diode-Zener 1/2W 5.1V "TE	1
Z403	4837-5V16-2	Diode-Zener 1/2W 5.1V "TE	1
Z401	4837-6V26-2	Diode-Zener 1/2W 6.2V TEM	1

00166-6

ESC230 (120V) Parts List (Cont.)

Ref. Designator	Part Number	Description	Quantity
Z402	4837-6V26-2	Diode-Zener 1/2W 6.2V TEM	1
D201	4840-8060-2	DIODE 1N4148 NS	1
Z201	4840-8370-0	Diode-Zener 1/2W 9.1V AT	1
Miscellaneous			
PCB-2	1723-716A-0000	PCB 2875-2/3/4 R	1
L501- L506	1804-9050-0	COIL 0.8M v D=5.5MM	6
JD201	2101-9140-0	WAFER JM24182-3P	1
JD202	2101-9150-0	JM24182-6P WAFER	1
JD203	2101-9160-0	JM24182-7P WAFER	1
RCA201	2113-9558-0	2RCA JACK HSP-21 P 1-43-003	1
RCA202	2113-9558-0	2RCA JACK HSP-21 P 1-43-003	1
RCA203	2113-9558-0	2RCA JACK HSP-21 P 1-43-003	1
for LM1876	2600-3005-0803	METAL WASHER M3X	3
for LM1876	2607-3009-0550	WASHER M3	3
for LM1876	2640-3022-0544	M3 NUT NI	3
X301	2703-0220-0	RES CER 4MHZ CSA	1
for LM1876	2900-3016-3000	SCREW PH M3X 16	3
for IC 7805	2954-3006-3000	3X6MM B-TITE (BL	1
for TR 7809	2954-3006-3000	3X6MM B-TITE (BL	2
for IC 7805	2954-3008-3000	T3X8MM SELF TAPP	1
for TR 7809	2954-3008-3000	T3X8MM SELF TAPP	1
	4153-1610-0	RUBBER PAD 12x7x	1
TR 7809	5400-9120-0	HEAT SINK FOR 7816	1
IC 7805	5400-9130-0	HEAT SINK FOR 7817	1
IC 1876	5400-9140-0	2601-7 HEAT SINK	1
PCB ASSY SPKR	PCB-NK620C-SPK		3
C511	150F-102K-5-IEA	CC 50V 1000P 10%	1
C522	150F-102K-5-IEA	CC 50V 1000P 10%	1
C510	150F-472K-5-MEA	CC 50V 4700PF 10	1
C521	150F-472K-5-MEA	CC 50V 4700PF 10	1
MISCELLANEOUS			
L601	1806-2343-0	TRANSFORMER TD-1	1
	4133-1690-0	2601-4 TOP COVER	1
	4134-2242-0	BOTTOM COVER 287	1
	4151-9461-0	STRAIN RELIEF BU 4N-4	1
	4153-1150-0	FUSE HOLDER FH-0	1
F601	5120-9022-0	FUSE 3A UL 5X20MM	1
AC CORD	7009-3100-2	18AWGX2 SPT-2 UL/CSA	1
	2113-1287-0	SPK T'NAL HSP-10	1
	4060-0530-0	GREENCELL 3A SIZ	2
	7011-3430-0	2RCA PHONO/STERE	1
	7011-4990-0	1MT BLK SHIELD W	1
	8900-2040-0	REMOTE CONTROL	1
	2934-2606-3000	SCREW TAP-BT BH	4
	2934-2606-3000	SCREW TAP-BT BH	10
	4152-6790-0	FRONT PANEL 2875	1
	4153-1400-0	2601-5 KEY PAD F	1
	4153-2680-0	2018-9 (Y) BADGE	1
	4153-3010-0	LENS ACRYLIC 260	1
for FOOT	2600-3005-0803	METAL WASHER M3X	4

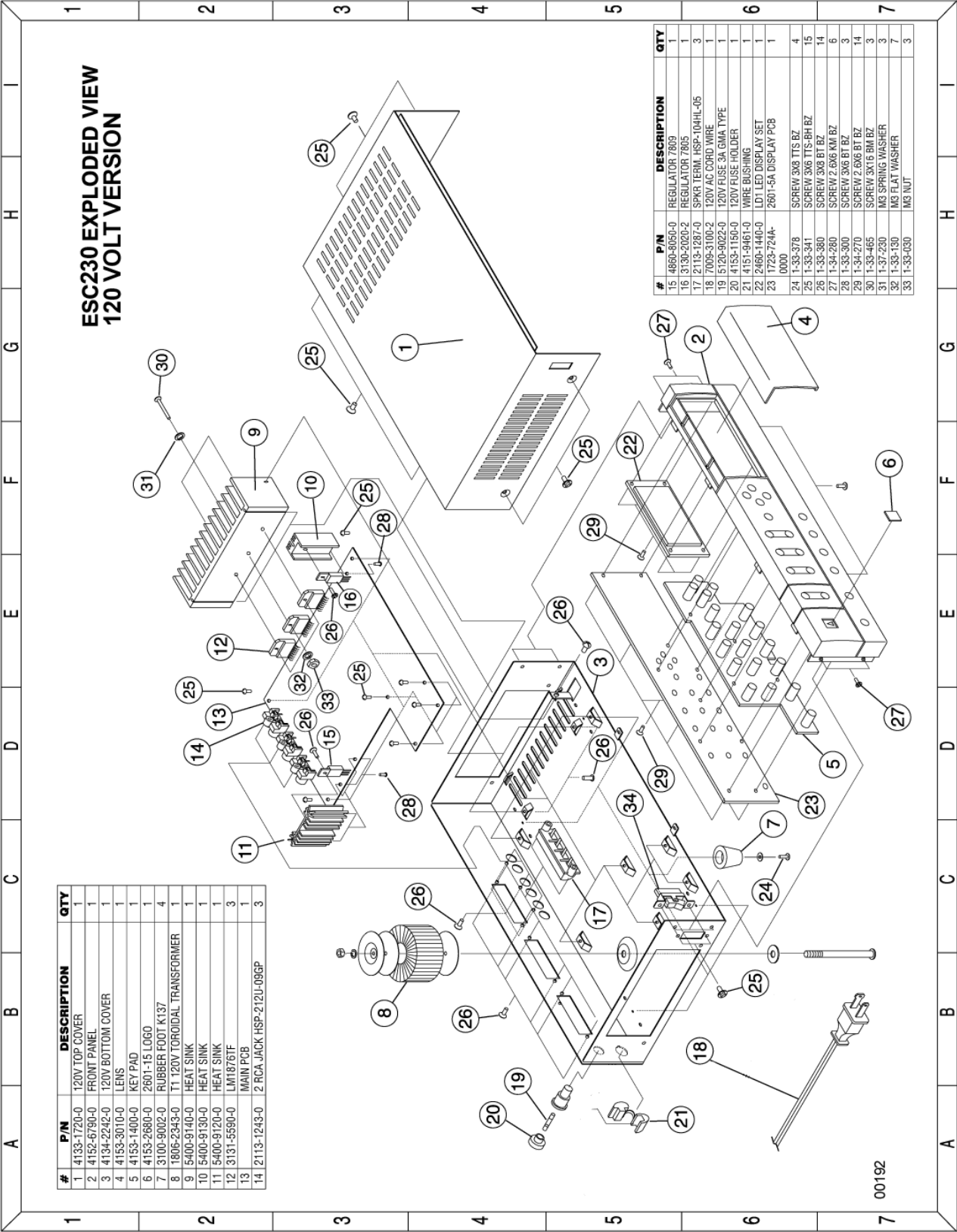
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ESC230 (120V) Parts List (Cont.)

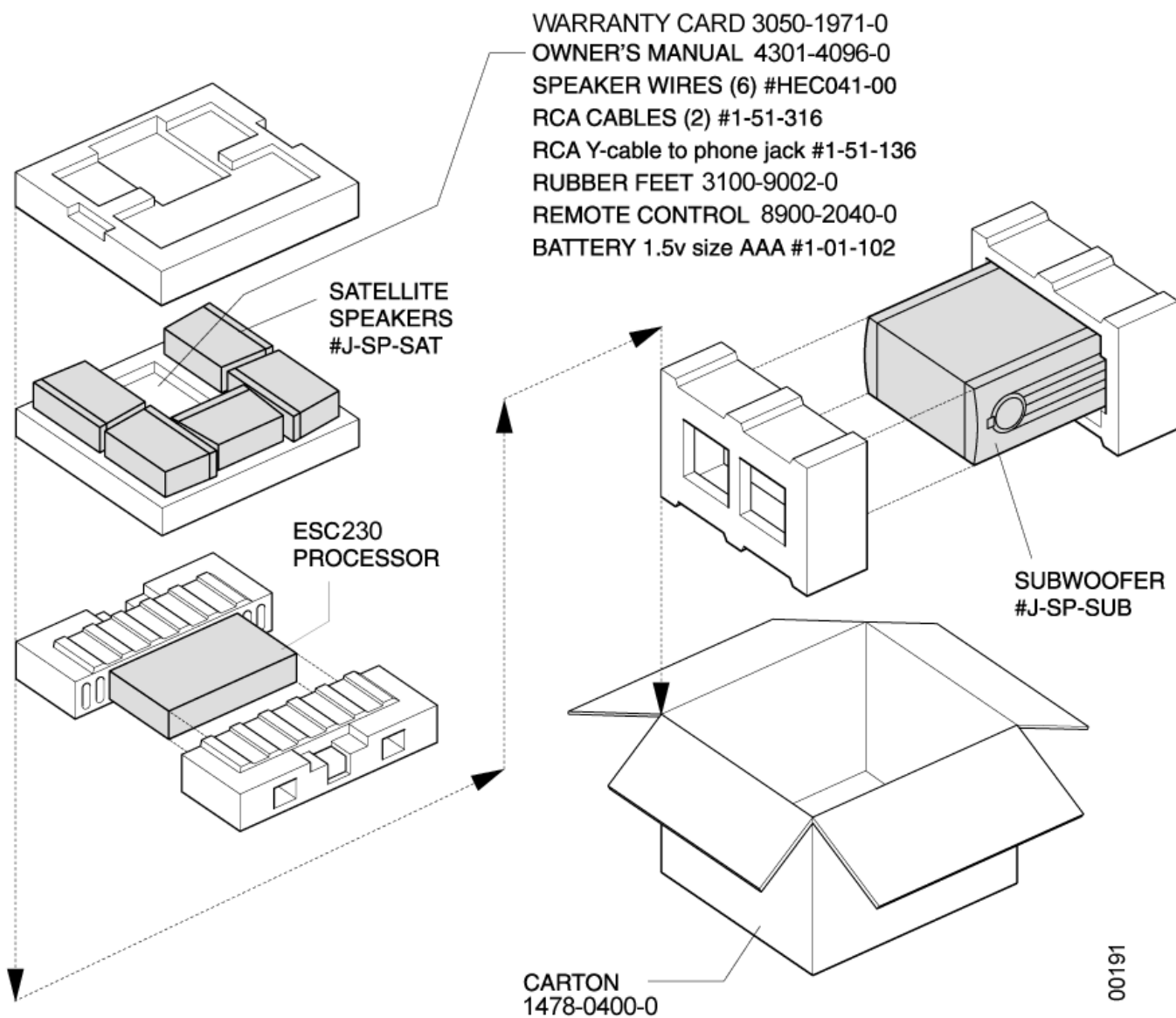
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for TRANSISTOR	2600-6510-1704	METAL WASHER M6.	1
for FRONT PANEL	2901-2606-3000	SCREW M2.6X6 M/C	6
for PCB-2	2944-3006-3000	SCREW D3X6 S-TIT	7
for TOP COVER	2944-3006-3000	SCREW D3X6 S-TIT	6
for FOOT	2954-3008-3000	T3X8MM SELF TAPP	4
for LM1876 H.S	2954-3008-3000	T3X8MM SELF TAPP	3
for RCA JACK	2954-3008-3000	T3X8MM SELF TAPP	5
for SPK TERMINAL	2954-3008-3000	T3X8MM SELF TAPP	6
for BOTTOM COVER	3100-9200-0	RUBBER FOOT K137	4

00166-8

ESC230 Exploded View

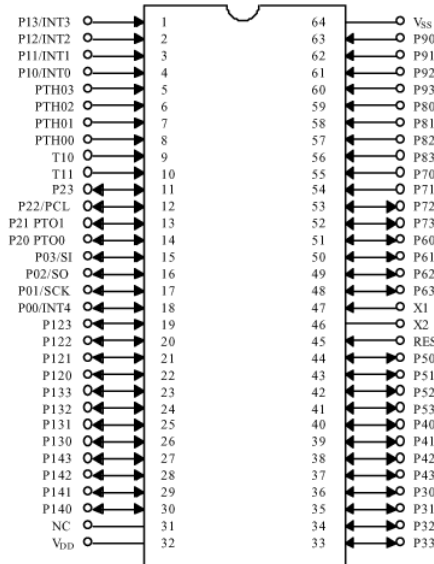


ESC230 Packing

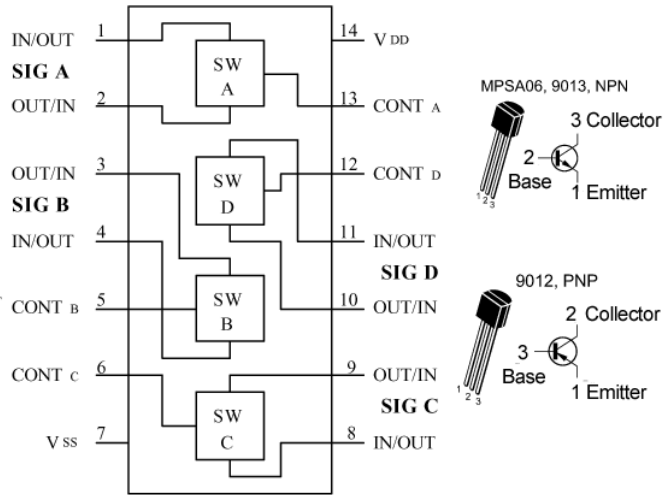


ESC230 Integrated Circuit Diagrams

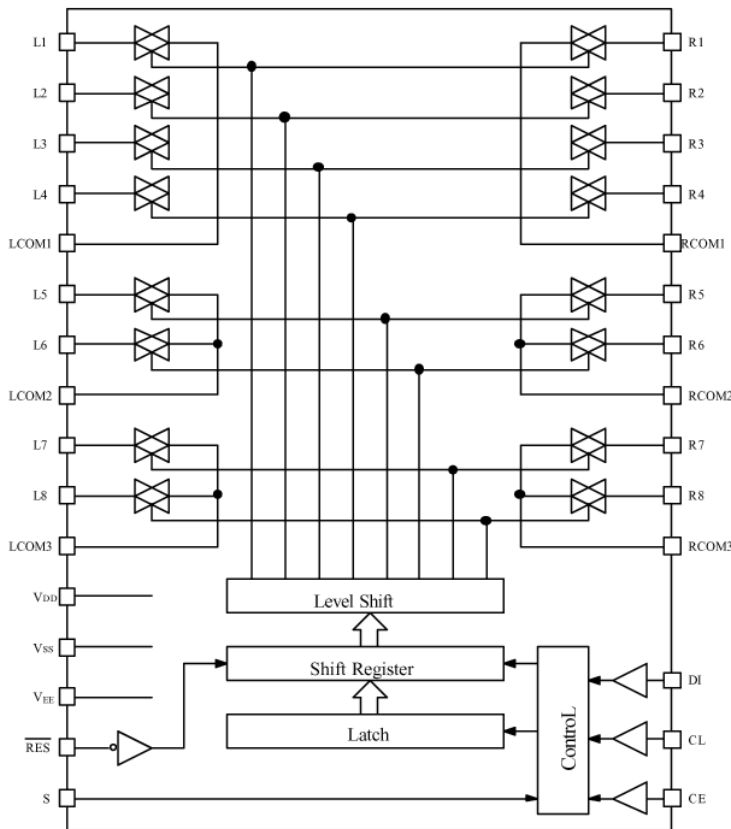
IC U101 - uPD75108BCW NEC
MICROPROCESSOR



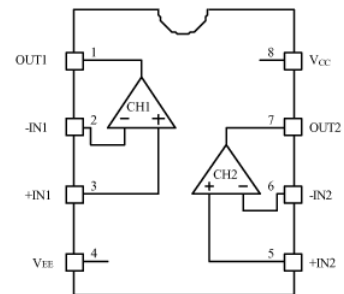
IC U402,U403,U404 - CD4066D
QUAD BILATERAL SWITCH



IC U202 - LC7821N ANALOG SWITCH

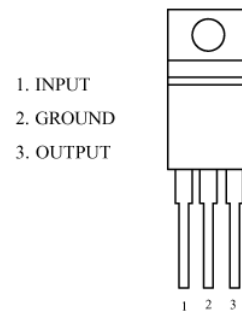


IC U201,U501,U503,U505
- BA4560 DUAL OP-AMP



IC U601 - TR7809
+9V REGULATOR

IC U602 - TR7805
+5V REGULATOR

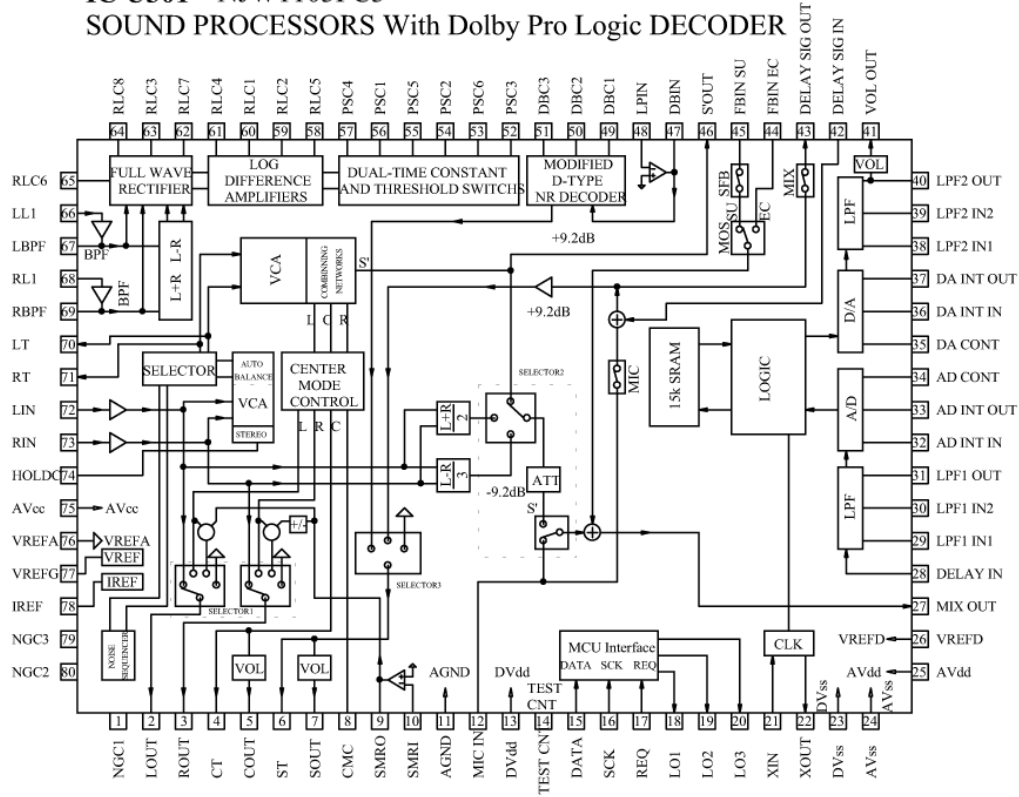


00187

ESC230 Integrated Circuit Diagrams (Cont.)

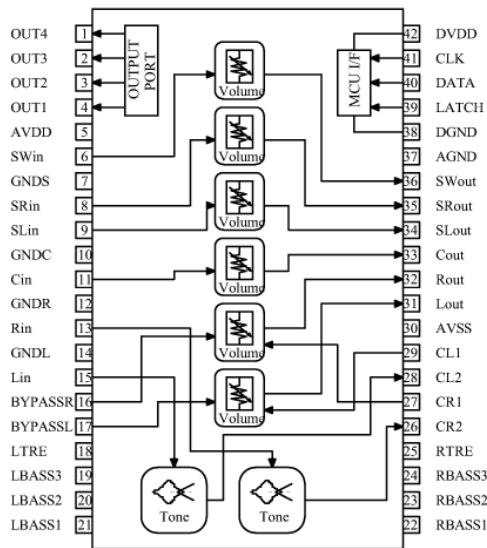
IC U301 - NJW1103FC3

SOUND PROCESSORS With Dolby Pro Logic DECODER



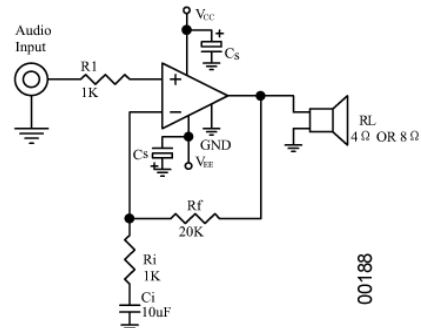
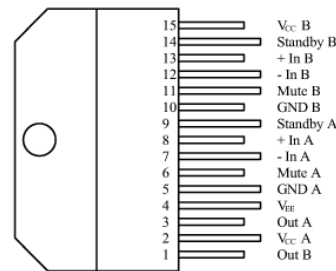
IC U401 - M62446FP

6CH ELECTRIC VOLUME
With TONE CONTROL



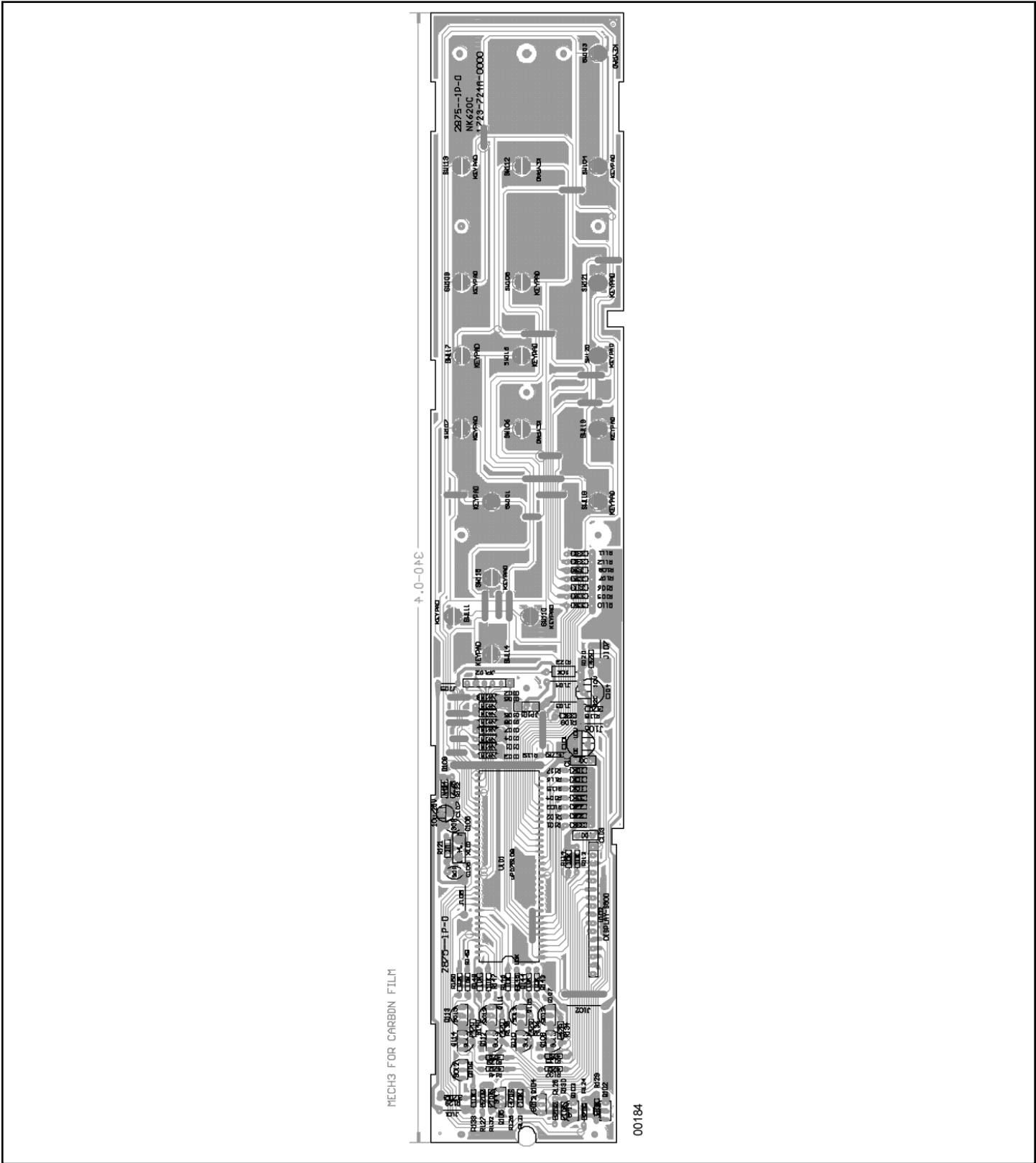
IC U502,U504,U506 - LM1876TF

20W POWER AMP

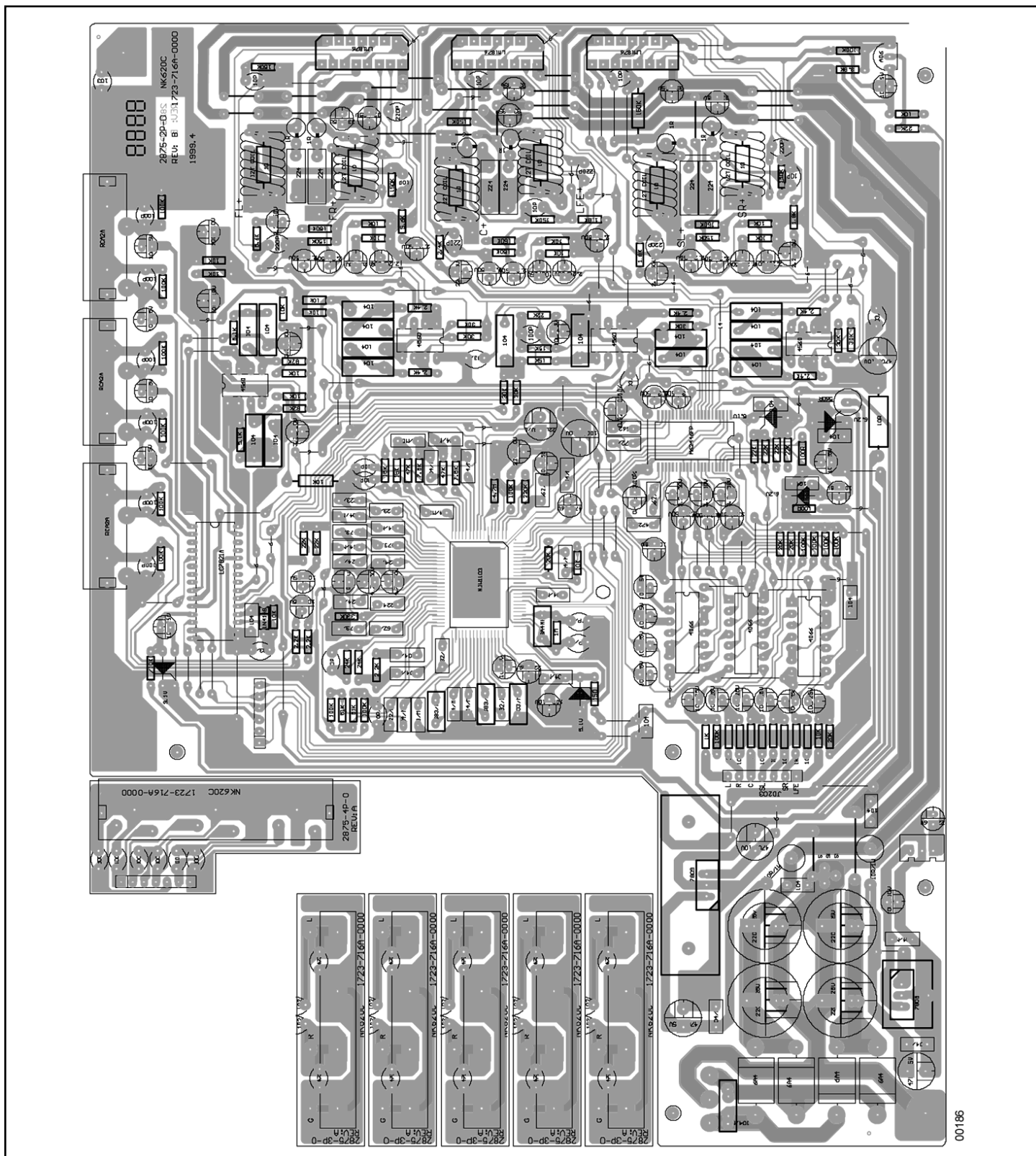


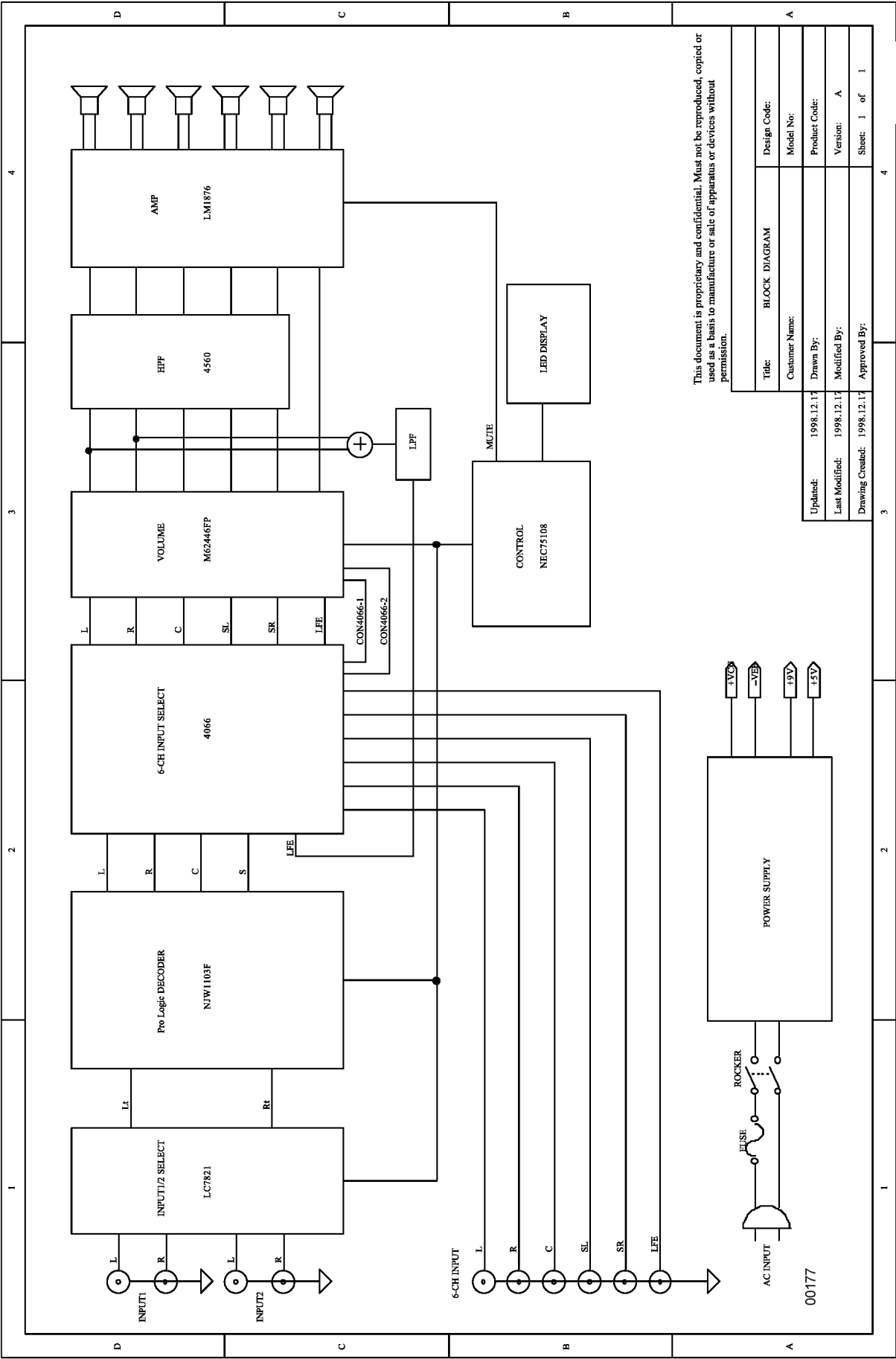
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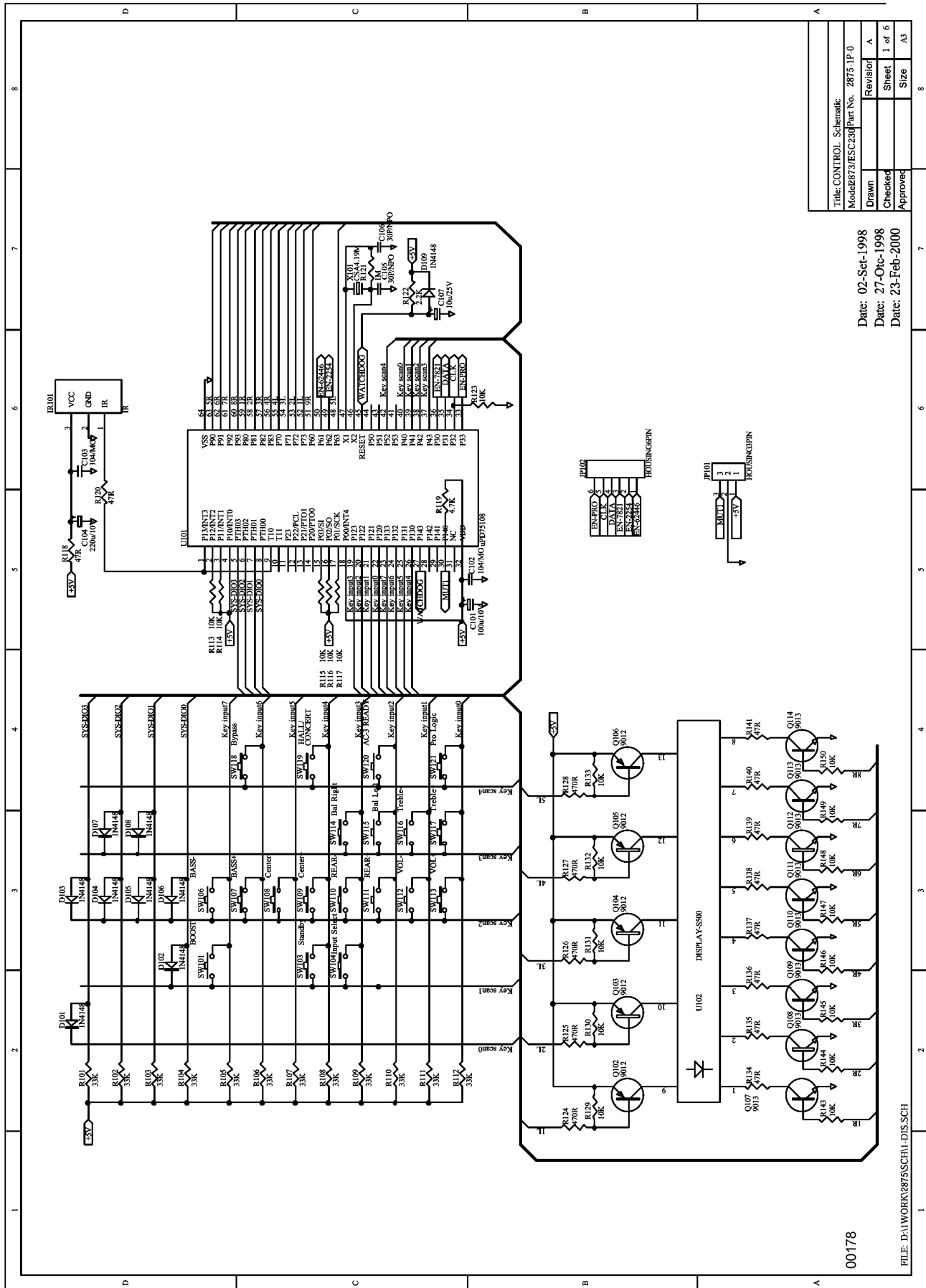
ESC230 PCB's

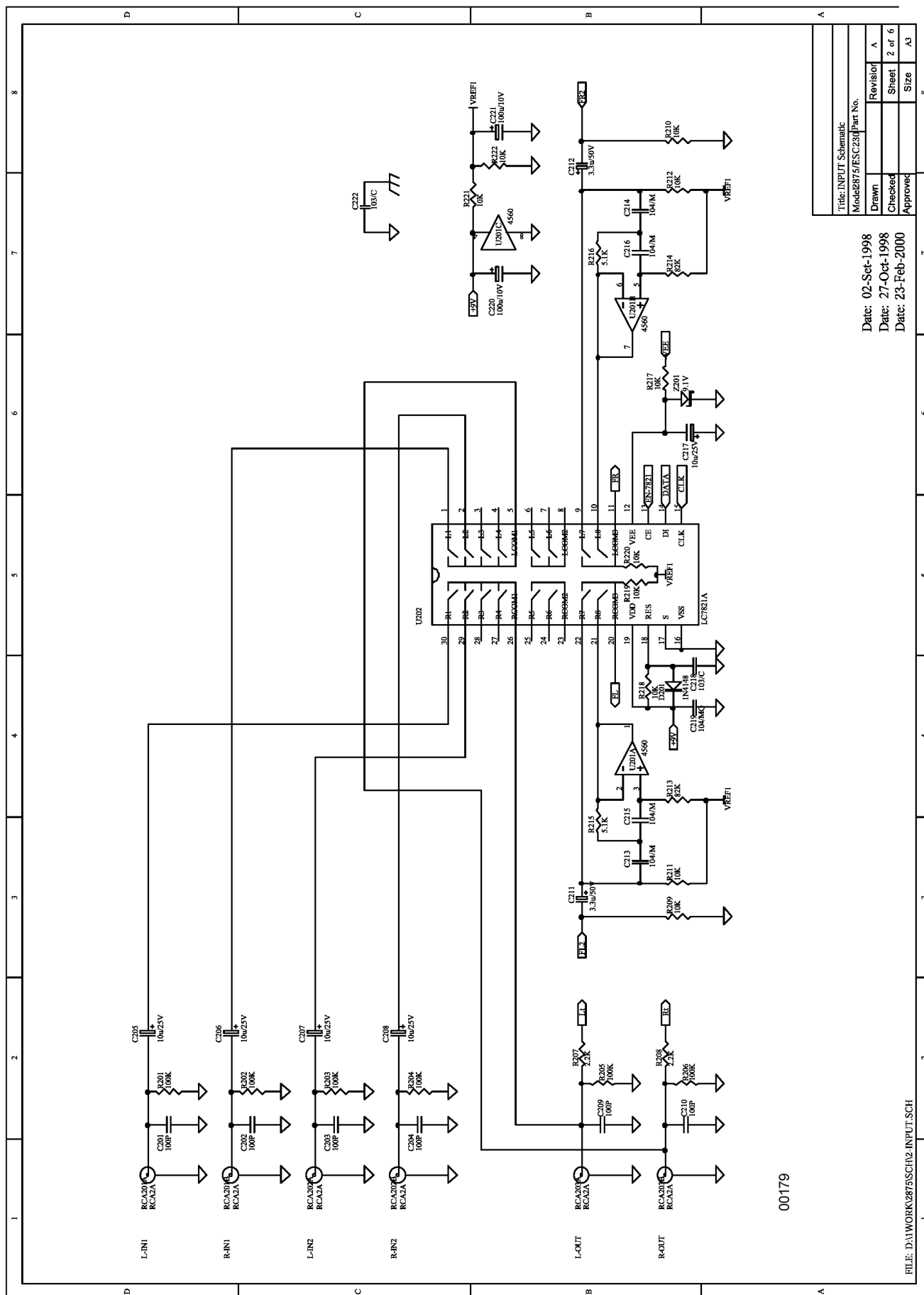


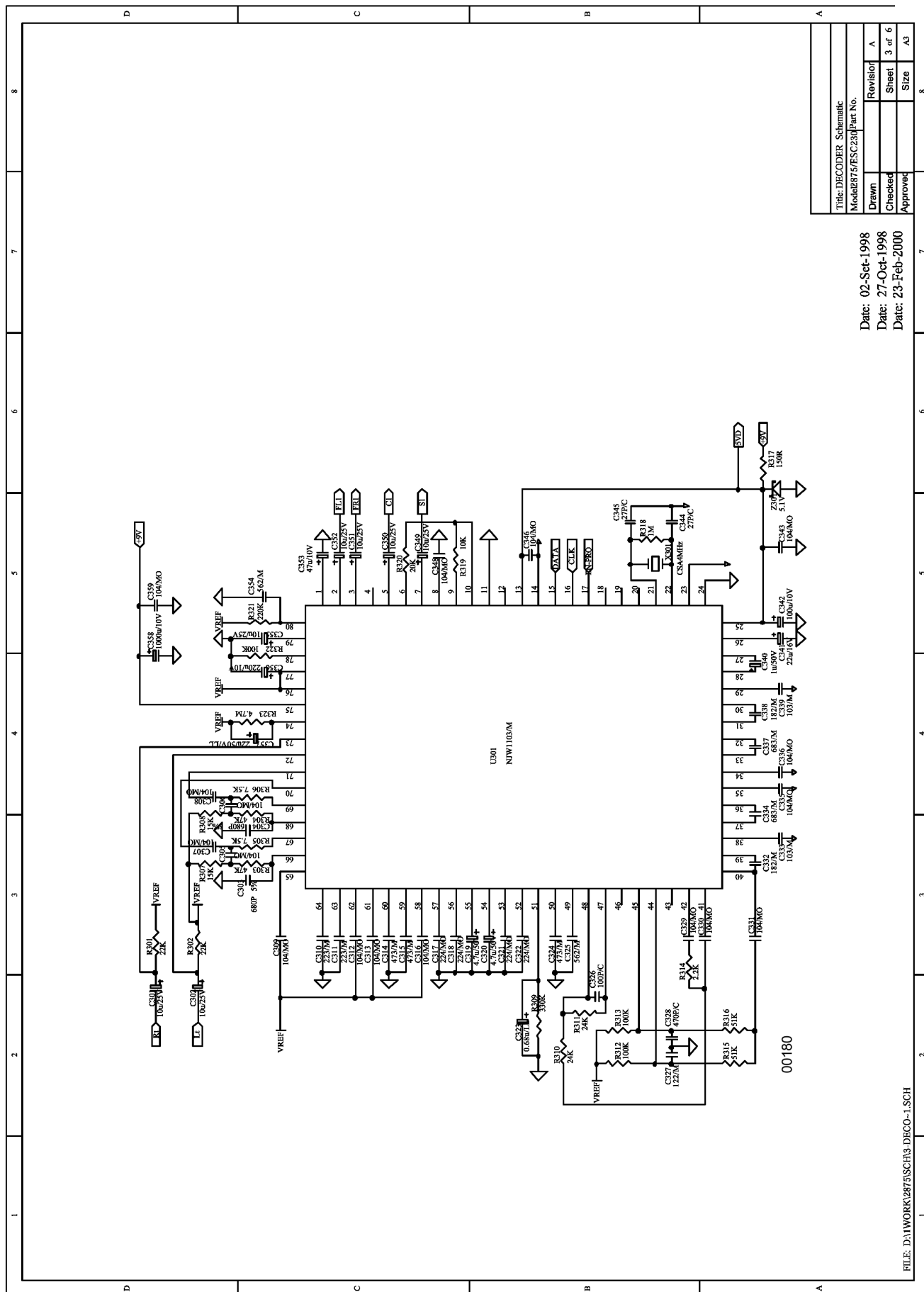
ESC230 PCB's (Cont.)

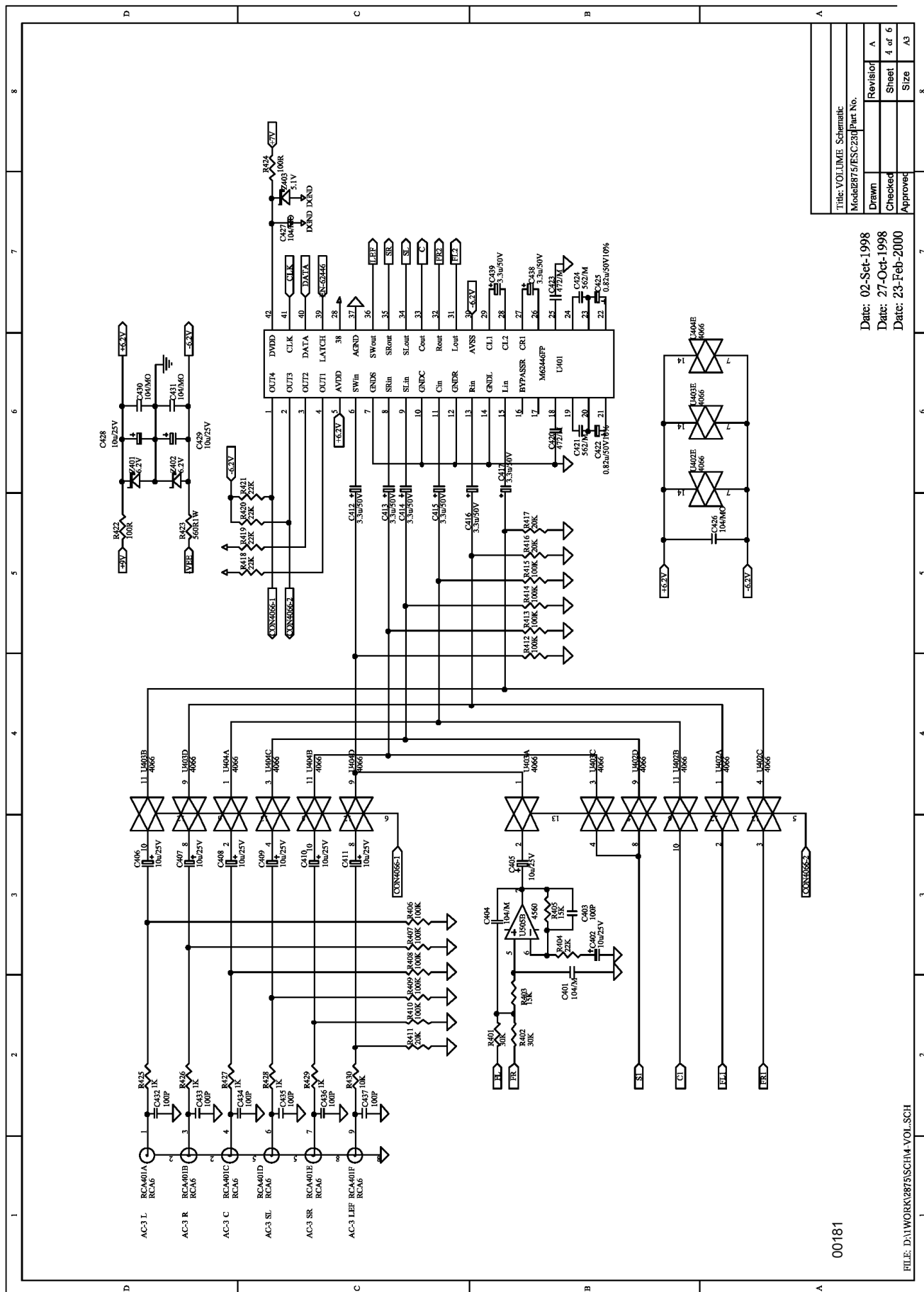


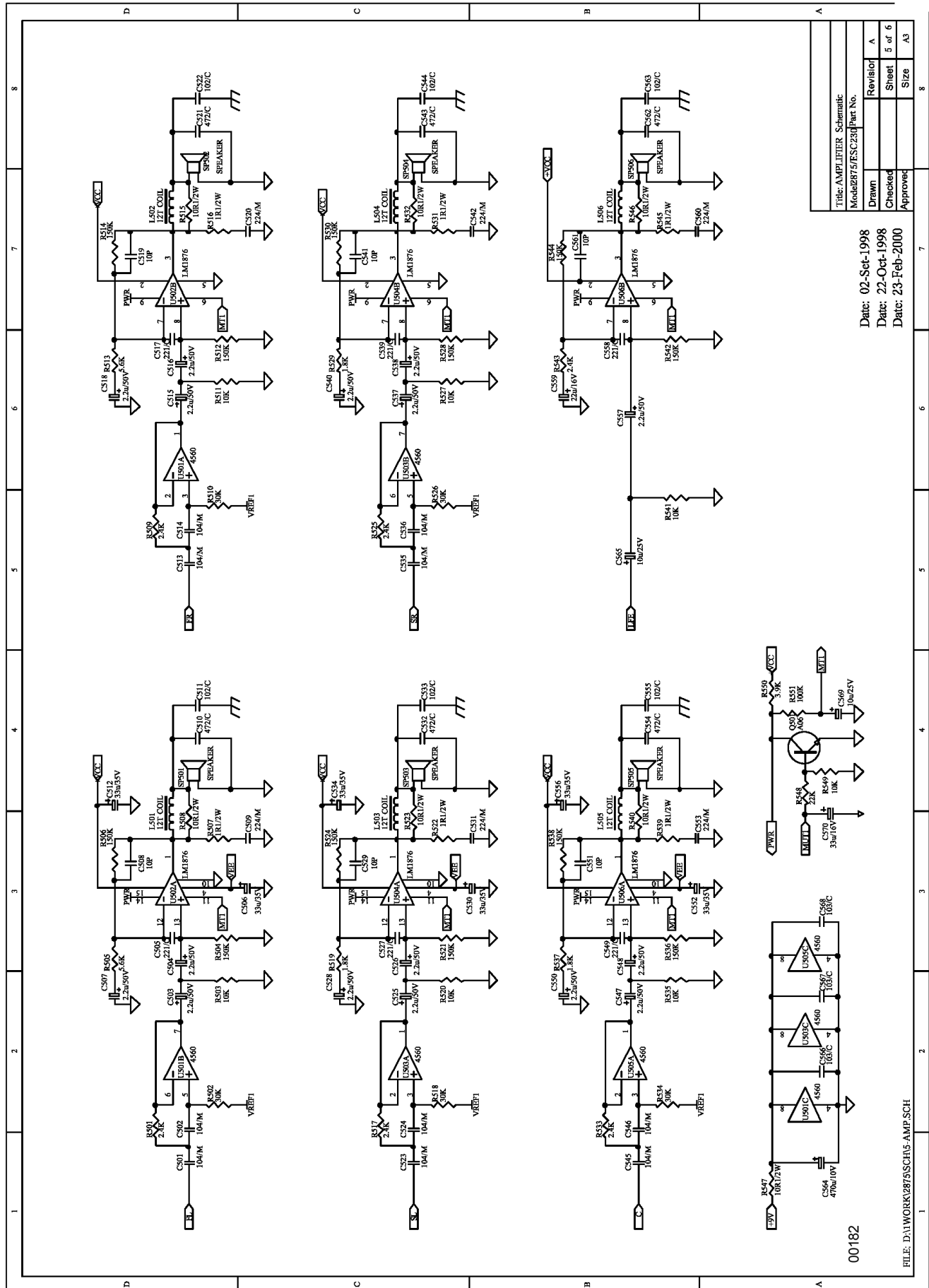


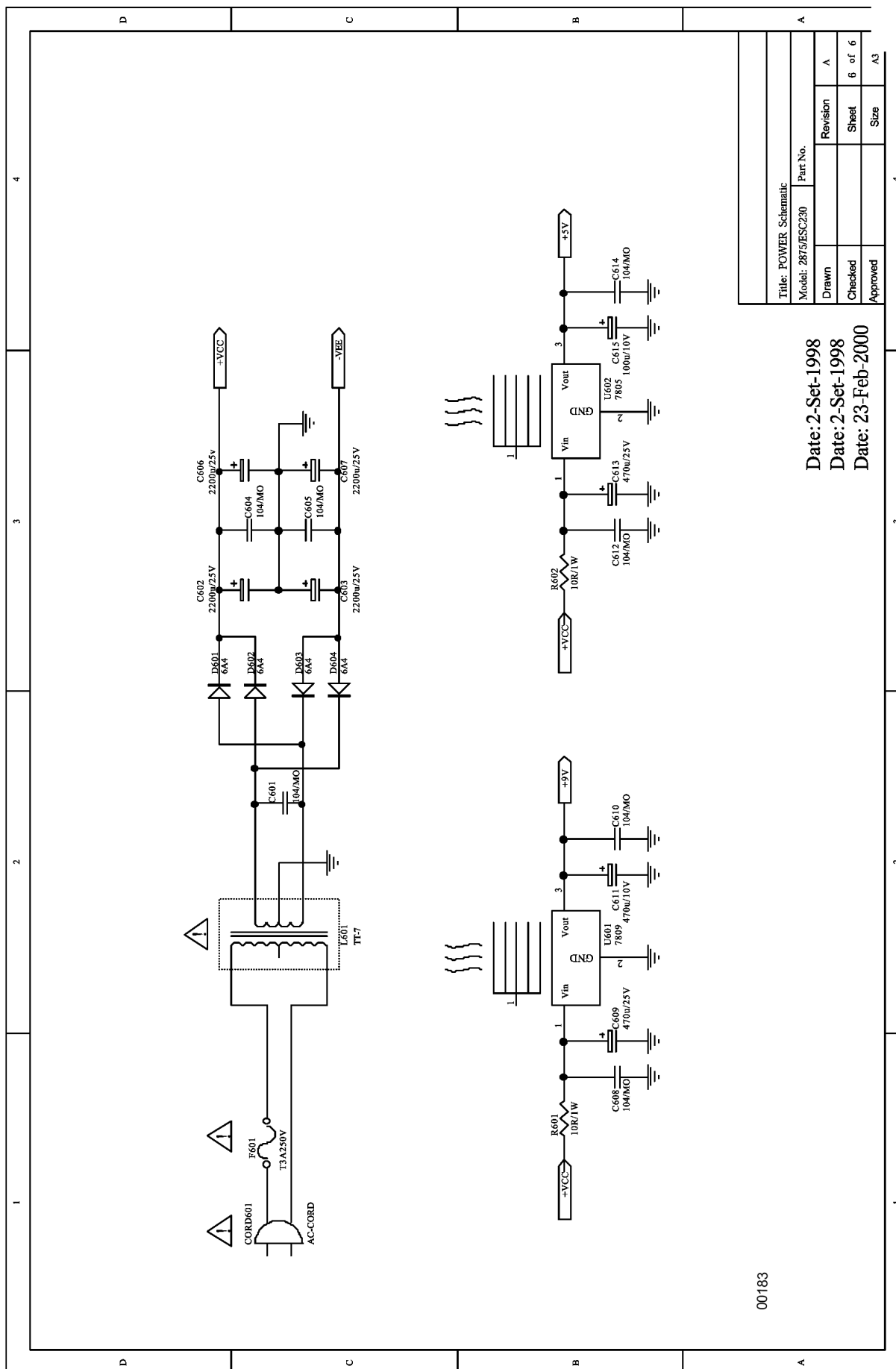












ESC230 IC Voltage Readings

M62446FP - U401

PIN	VOLT	PIN	VOLT
1	-6	22	0
2	5	23	0
3	—	24	0
4	—	25	0
5	6.2	26	0
6	0	27	0
7	0	28	0
8	0	29	0
9	0	30	-6.2
10	0	31	0
11	0	32	0
12	0	33	0
13	0	34	0
14	0	35	0
15	0	36	0
16	0	37	0
17	0	38	0
18	0	39	—
19	0	40	—
20	0	41	—
21	0	42	5

NJM1103F3 - U301

PIN	VOLT	PIN	VOLT
2	4	22	—
3	4	26	2.5
4	4	27	4
5	4	28	2.5
6	4	40	2.5
7	4	41	2.5
9	4	42	4
10	4	43	4
12	4	44	4
14	0	45	4
15	—	46	4
16	0	47	4
17	0	48	4
18	—	70	4
19	—	71	4
20	—	72	4
21	—	73	4

LC7821 - U202

PIN	VOLT	PIN	VOLT
1	4.1	16	0
2	4.1	17	0
3	4	18	9
4	4.1	19	9
5	4	20	0
6	4	21	0.3
7	4.1	22	0
8	4.1	23	4.1
9	0	24	4.1
10	0.3	25	4
11	0	26	4
12	-8.2	27	4.1
13	0	28	4
14	8.7	29	4.1
15	0.1	30	4.1

BA4560 - U201,U501
U503,U505

PIN	VOLT	PIN	VOLT
1	4.1	5	4.1
2	4.1	6	4.1
3	4.1	7	4.1
4	0	8	9

4066D - U402

PIN	VOLT	PIN	VOLT
1	0	8	0
2	0	9	0
3	0	10	0
4	0	11	0
5	5	12	5
6	5	13	5
7	-6.2	14	6.2

LM1876 - U502,U504,U506

PIN	VOLT	PIN	VOLT
1	0	9	0.1
2	22	10	0
3	0	11	0.1
4	-22	12	0
5	0	13	0
6	0.1	14	0.1
7	0	15	22
8	0		

4066D - U403

PIN	VOLT	PIN	VOLT
1	0	8	0
2	0	9	0
3	0	10	0
4	0	11	0
5	5	12	-6
6	-6	13	5
7	-6.2	14	6.2

4066D - U404

PIN	VOLT	PIN	VOLT
1	0	8	0
2	0	9	0
3	0	10	0
4	0	11	0
5	-6	12	-6
6	-6	13	-6
7	-6.2	14	6.2